ASBPE MAGAZINE OF THE YEAR 2004

- IBM will try, try again with a disk array built around iSCSI technology. **PAGE 6**
- U.K.-based CP Ships learns some unpleasant truths from its SAP finance applications. **PAGE 8**

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SEPTEMBER 6, 2004 ▪ VOL. 38 ▪ NO. 36 ▪ $5/COPY

CIOs Foresee Modest Boost In IT Spending

New investments being eyed for 2005 aim to cut infrastructure and labor costs

BY THOMAS HOFFMAN

As the IT budget season heats up, CIOs interviewed last week said they're guardedly optimistic about their 2005 spending plans. But many IT managers are expected to increase spending on hardware and outsourcing primarily in response to pressure from corporate executives to cut IT infrastructure and labor costs.

For instance, a survey of 195 North American CIOs released last week by Forrester Research Inc. indicated that companies plan to increase their overall IT spending by an average of 7% next year. Spending on hardware is expected to jump by 14% over this year's levels, it said.

However, some of the anticipated hardware growth is being driven by investments companies are making in less expensive machines that are expected to produce operational cost savings over the

IT Spending, page 14

ONLINE

Get more on IT spending on our Web site: a2120

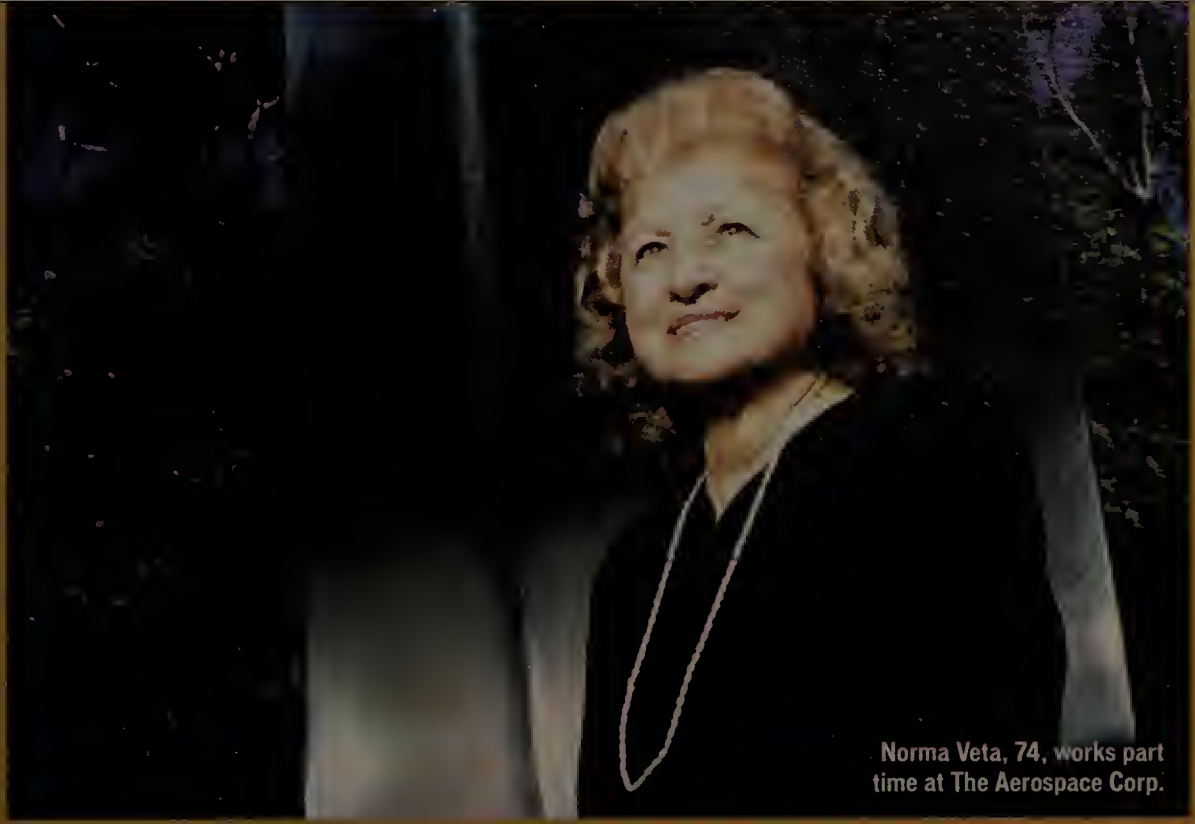
Spending Increases Not Likely To Trickle Down to Tech Workers

Analysts last week offered words of caution to IT staffers: Don't translate next year's expected growth in IT spending into visions of fatter wallets.

The widespread availability of low-cost labor overseas has meant fewer bonuses and raises for technology professionals in the U.S., said Barbara Gomolski, an analyst at Gartner Inc. and a *Computerworld* columnist. And that isn't likely to change, according to Gomolski and other market watchers.

Forrester Research estimates that companies will increase the head counts of their U.S. IT staffs by just 5% between now

Tech Workers, page 14



Norma Veta, 74, works part time at The Aerospace Corp.

LARA JO REGAN

Staying Power

Gone today, back tomorrow. Some IT retirees are returning to work on their own terms. Julia King reports on why smart companies are encouraging them. **PAGE 37**

Many Users Are Unfazed by Scaled-Back Longhorn Plan

But some want WinFS instead of 3-D graphics

BY CAROL SLIWA

The next major Windows release, code-named Longhorn, is due to arrive so far into the future that many corporate users aren't particularly bothered by Microsoft Corp.'s plan to scale back the product.

Prior to its late-August announcement, the company had pledged that Longhorn would feature three innovative new elements: the Avalon graphics subsystem, boasting special 3-D effects; the Indigo communications subsystem for building advanced Web services; and the WinFS storage subsystem, which aims to provide advanced data organization and management capabilities and make it easier to search for information.

But in order to hit its targets for delivering the Longhorn client in 2006 and the server operating system in 2007, Microsoft said it won't include WinFS. The storage subsystem will be in beta testing when the Longhorn client is released, the company noted.

"It isn't that big of a deal,"

Longhorn, page 53

MORE INSIDE

[illegible]

NEWSPAPER

ANOTHER EXPERT WEIGHS IN ON THE TCO OF WINDOWS AND LINUX.

Microsoft

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09.06.04

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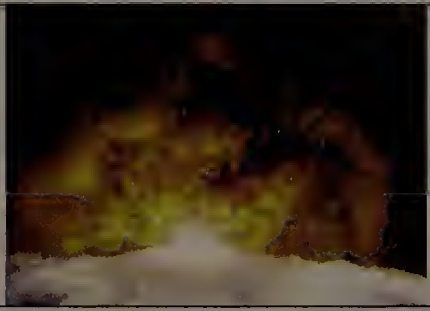

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Mobile Interfaces: An End-User Perspective

MOBILE/WIRELESS: A business traveler armed with a laptop wonders why he can't simply click on an application while on the road and get some work done. **QuickLink 49234**

Mobile Directory Rings True

IT MANAGEMENT: Columnist Jay Cline says the proposed directory of cellular phone numbers includes all of the privacy controls it needs. **QuickLink 49184**

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AT DEADLINE

IBM Recalls 225k Notebook Adapters

IBM is recalling about 225,000 AC power adapters for its notebook computers because of concerns about fire and electrical shock hazards. The company jointly announced the recall with the U.S. Consumer Product Safety Commission, which has received at least six reports of overheating incidents involving the adapters. IBM said it will replace the devices, which were sold in 1999 and 2000.

Oracle Releases Software Patches

Oracle Corp. issued patches designed to plug nearly three-dozen security vulnerabilities in its databases, application server software and Enterprise Manager tools. The holes were reported to Oracle early this year by security researcher David Litchfield and came to light in July [QuickLink 48593]. Oracle gave some of the flaws a "high" risk rating and said there are no work-arounds that will fully address the problems.

Intel Lowers Its Q3 Sales Forecast

Citing weak sales, Intel Corp. cut its third-quarter revenue forecast and said the fourth quarter may be tough as well. "Our current outlook for the third quarter, and the remainder of the year, reflects a weaker market than we had expected," said Chief Financial Officer Andy Bryant. Intel expects revenue of between $8.3 billion and $8.6 billion this quarter.

KeyCorp Taps USAA Exec to Be Its CIO

Cleveland-based KeyCorp named Steve Yates CIO, effective last Friday. Yates had been president of USAA Information Technology Co., the IT services arm of San Antonio-based USAA. He replaces Robert Rickert, who left KeyCorp in late July to become the CEO of a health-care-related start-up.

IBM Rolls Out Arrays, Tries Again on iSCSI

Re-enters storage device market based on low-cost data-transport protocol

BY LUCAS MEARIAN

IBM ANNOUNCED a pair of entry-level workgroup disk arrays last week, including a scaled-down reincarnation of an iSCSI-based device that the company dropped two years ago.

IBM's new offerings include the iSCSI-based TotalStorage DS300, as well as the DS400, a Fibre Channel array that scales up to 5.8TB and is priced from $5,000 to $7,000. Both arrays can be managed by IBM's ServeRAID tools and support remote data mirroring and copying functions, the company said. They're also the first new products to be sold under the DS brand name, which will eventually be extended to all of IBM's arrays.

The DS300 is a native iSCSI array similar to the 200i, which IBM first offered in 2001 and withdrew a year later after selling fewer than 500. The 200i was the first iSCSI array on the market; at the time, IBM said it was stopping development of iSCSI-based arrays and instead pursuing partnerships that would let its other products use the low-cost data-transport protocol via gateways [QuickLink 30960].

When the 200i was introduced, "it really wasn't as cost-effective as it needed to be for the market space we were going after," said Cindy Grossman, IBM's director of storage marketing. "I think it was ahead of its time, frankly." But, she added, IBM's sales teams have been hearing more and more demand from users for a low-cost iSCSI array to consolidate data stored on Windows and Linux servers.

The DS300 is priced from $3,000 to $4,600 and can store up to 2TB of data, compared with the 3.5TB capacity that was offered on the 200i.

A network coordinator at a large insurance firm in California said that given a slowdown in IT spending at his company, iSCSI makes for a cheap alternative to Fibre Channel storage, as long as applications with high I/O rates aren't involved. "ISCSI isn't good for that because of the TCP/IP overhead and bottleneck caused by Ethernet," he said.

The network manager, who asked not to be named, said he has been using a 1.5TB iSCSI array from StoneFly Networks Inc. in San Diego for the past year to store data from three Compaq ProLiant servers. The systems were using about 90% of their internal storage space before the addition of the array, which cost about $25,000 and took one hour to install.

IBM's DS300 and DS400 disk arrays:

- Are designed for workgroup storage applications, such as file, print and Web serving.
- Are being offered in single- and dual-controller models, with respective shipment dates of Sept. 24 and Dec. 17.
- Work with IBM's xSeries and BladeCcenter servers running Windows or Linux.

"It's proved to be dynamic," he said, describing one situation in which a server went down and IT staffers at the insurer were able to use Microsoft Corp.'s iSCSI initiator driver to reconnect the array to another server and then attach it to the company's databases.

Enterprise Strategy Group Inc. in Milford, Mass., estimates that there are about 1,500 iSCSI-based storage-area networks in use now and that the number will exceed 2,000 by year's end. Tony Asaro, an analyst at the firm, said the use of iSCSI is quickly ramping up because of its cost-effectiveness. Users who adopt iSCSI don't have to invest in more expensive Fibre Channel disks, host bus adapters or switches, he said.

Asaro added that the number of iSCSI-based products offered by vendors has steadily increased over the past two years, helping to validate the technology for users.

IBM also replaced its FAStT midrange storage brand with the DS name last week and said it will do the same with its Enterprise Storage Server high-end arrays later this year. "We wanted to start building a lot more commonality in our storage server line," Grossman said. **49230**

HP, Sun to Resell New High-End Hitachi Array

BY LUCAS MEARIAN

Hewlett-Packard Co. and Sun Microsystems Inc. both plan to announce tomorrow that they will resell a high-end disk array being introduced by Hitachi Data Systems Corp.

Hitachi declined to comment on its new array in advance of a press conference it's holding in New York. But Shebly Seyrafi, an analyst at Merrill Lynch & Co., said Hitachi plans to unveil the third generation of its Lightning array, ratcheting up its competition with EMC Corp in the high-end storage market.

Hitachi launched its first Lightning array in 2000 and followed that two years later with its current Lightning 9900V models. EMC lost market share to Hitachi after both product announcements, Seyrafi said. But early last year, EMC launched a new Symmetrix DMX high-end line. "We do not foresee EMC losing as much share as in prior Lightning announcements, as it has a much-improved product, but we do expect some share loss," Seyrafi said.

HP said it plans to market the new array as its StorageWorks XP12000 model. The XP12000, which starts at $450,000, can scale up to 165TB of capacity across five cabinets, according to HP officials. It can also be integrated with previous XP-model arrays through an external storage tool kit, they said.

Sun confirmed that it will also resell the new Lightning device, but the company declined to comment further until tomorrow's announcement.

The Next Phase

IDC analyst Robert Gray said the high-end arrays that HP and Sun now offer are made by Hitachi, "so all they're doing is rolling over to the next technology."

HP said it has added software to the XP12000 that will support clustering and failover functionality. "If you have a power outage in a building or experience some other man-made or natural disaster . . . you can seamlessly fail over to another data center up to 100 kilometers away," said Kyle Fitze, HP's director of marketing for online storage.

HP's existing midrange and high-end arrays, the XP128 and XP1024, scale up to 18TB and 149TB of capacity, respectively. In addition to the capacity boost that the XP12000 will provide, the new array is less of a monolithic system than the XP1024 is, Fitze said. He noted that the XP12000 also adds support for external storage, cache partitioning and continuous access journaling, which ensures that data being mirrored between two arrays is synchronized. **49251**

U.S. Tennis Association Nets Cost Savings From Server Consolidation

IBM combines scoring, Web publishing apps for tournament on iSeries system

BY THOMAS HOFFMAN
NEW YORK

Andy Roddick's 152 mph serve wasn't the only power move on display last week as the U.S. Open tennis tournament began its two-week run here. From an IT perspective, all eyes were on a new iSeries server that was put in place for the tournament by IBM.

The company, which manages computer operations for the United States Tennis Association, last month completed a consolidation of the Internet-based scoring, data staging and Web publishing applications used during the U.S. Open from three of its xSeries servers onto a single i5 520 system that runs Linux.

The server consolidation was finished on Aug. 20 and has helped IBM reduce the USTA's cost per end user by 40% compared with last year's tournament, thanks to reduced disk requirements and more efficient workload processing, said IBM project manager John Kent. He noted that the iSeries machine can automatically move workloads from one server partition to another, providing more processing flexibility than the xSeries systems did.

The i5 520 is located at the U.S. Tennis Center in the Flushing Meadows section of Queens. The USOpen.org Web site is supported by another iSeries machine at an IBM data center, and Web publishing data is sent to two other IBM facilities for workload provisioning and data redundancy. IBM declined to disclose the locations of its data centers.

When a point is made during a match, the chair umpire uses an IBM-branded Palm handheld computer to enter the score. The data is then fed into IBM's DB2 Universal Database software, which is installed on one partition within the i5 520 server. A group of 30 USTA writers, editors, producers and audio/video engineers process information for the tournament's Web site using a Linux-based x365 system that runs IBM's WebSphere Portal content publishing software.

A staging server runs in another i5 520 partition and combines data from the Internet scoring system and the content publisher to create the USOpen.org Web pages.

Meeting Demands

IBM's on-demand computing approach has helped the tennis association handle wide swings in processing demands, according to USTA officials.

"This [tournament] is like our Super Bowl," said Ezra Kucharz, managing director of interactive media for the USTA in White Plains, N.Y. "Our information needs here are 50 times what they are the other 50 weeks of the year, so it doesn't make sense for us to invest in that kind of infrastructure on an annual basis."

NEWSCOM.COM

THE USTA reduced costs per end user by 40% for this year's U.S. Open.

Haverty Furniture Cos. is another IBM customer that said it has benefited from a server consolidation project involving the iSeries, previously called the AS/400. The Atlanta-based company, which has about 100 retail outlets in the southeastern U.S., converted from nine AS/400s to three iSeries machines in January to support its core applications, including point-of-sale operations, customer service and home deliveries.

Haverty CIO J. Edward Clary, who attended an IBM press briefing at the tournament, declined to quantify the company's cost savings from the server consolidation project. But he said the effort has freed up some of Haverty's 50 IT staffers to help support technologies such as Domino, Linux and WebSphere. **49250**

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'War Drive' Reveals New York's Hidden Security Flaws

BY DAN VERTON
NEW YORK

While physical security was tightened to unprecedented levels here last week for the Republican National Convention, IT security researchers uncovered an unsettling number of unencrypted wireless devices that they said created a potential information security nightmare for convention organizers and delegates.

During a two-hour "war drive" around the site of the RNC as well as Manhattan's financial district, security researchers from Boston-based Newbury Networks Inc. discovered more than 7,000 wireless devices, 1,123 of which were located within blocks of Madison Square Garden, including a network named "Wireless for Kerry." More important, 67% of those devices were access points that didn't have any built-in encryption protection.

During the war drive, to which *Computerworld* was granted exclusive access, Newbury technicians set up an unsecured wireless "honeypot" that masqueraded as a Linksys access point. According to a log analysis of Newbury's WiFi Watchdog monitoring system, a wireless device attempted to automatically connect to the honeypot every 90 seconds.

DAN VERTON

LAST WEEK 1,123 wireless devices were found within blocks of the RNC.

The findings underscore that while New York continued to focus on physical security for the convention, the large number of open, unsecured wireless networks represented a serious threat to the city's hard-wired infrastructure, said Newbury CEO Michael Maggio.

"A wireless-enabled notebook computer powered up inside Madison Square Garden by a conventioneer or media representative could automatically associate with wireless networks outside of the building," said Maggio, noting that such a security gap could allow an attacker to gain access to the wired network inside the facility. "All the security policies in the world can't stop a wireless intruder from accessing an open network signal emanating from a Wi-Fi access point or network card."

The two-hour drive around Manhattan also revealed as many as 2,161 access points and 821 client devices broadcasting unique service set identifiers. "The SSIDs beaconed by clients is really a valuable list for an attacker," said Brian Wangerien, senior product manager at Newbury. "Once the attacker knows that a client is beaconing for a particular SSID, he can change the SSID of his [access point] and trick the client into connecting to the attacker's access point." **49249**

NO VOTES FOR WIRELESS

IT planners left wireless support out of the convention's network:

QuickLink 49186
www.computerworld.com

Nortel's CEO Remains Optimistic in The Face of Cutbacks, Competition

Struggling vendor needs to improve its marketing capabilities, Owens says

BY MATT HAMBLEN
BILLERICA, MASS.

DESPITE NORTEL Networks Ltd.'s recent announcement of more workforce cuts and executive firings, CEO Bill Owens last week said the struggling vendor is still investing heavily in research and development and is looking forward to having a "pretty exciting future."

But in a roundtable discussion with reporters, Owens also expressed concerns about future consolidation in the networking equipment market and new competition from China-based vendors such as Huawei Technologies Co. Owens predicted that companies like Huawei will create downward pricing pressures on all networking vendors.

3Com Corp. has set up a Hong Kong-based joint venture with Huawei, and Owens said Nortel is considering different ways of protecting itself against the new competition, including the possibility of forming its own partnerships or joint ventures. "Everybody [in the industry] is talking to everybody," he said.

Marketing Improvements

According to Owens, Nortel devotes about half of its workforce to engineering and still spends as much per employee on R&D as its rivals do. But, he added, Nortel is trying to improve its marketing and has appointed a board-level business-development executive to help out with that effort.

"Nortel is not particularly good at marketing . . . and that's one of the reasons I'm here," said Clent Richardson, the Brampton, Ontario-based company's vice president of global marketing. Richardson also took part in the roundtable along with Owens.

Zeus Kerravala, an analyst at Detwiler, Mitchell, Fenton & Graves Inc. in Boston, said Nortel has long been known for "good engineering, poor marketing." However, Kerravala said that the financial reporting problems now plaguing Nortel haven't been a big concern for the company's customers.

John Haltom, network director at Erlanger Health System in Chattanooga, Tenn., said he hasn't seen any impact from the latest reorganization at Nortel but added that he regrets the additional layoffs. Erlanger is installing networking gear and 1,700 voice-over-IP phones from Nortel, and Haltom said he thinks that sticking with the vendor is paying off as Nortel adds fault tolerance and other advanced capabilities to its products.

Haltom noted, though, that he's bemused by Nortel's plan to change the name of its Succession 4 voice switch as part of the marketing improvement effort. Nortel will begin using the name Communication Server 1000 in the fall — a change that marks the fourth time the switch has been renamed since Erlanger began using it several years ago, according to Haltom. "They are starting to wear me out with name changes," he said.

> "We will be pure, as pure as I can make this company.
>
> **BILL OWENS,**
> **Nortel president and CEO**

Nortel, which is restating its financial results back to 2001, last month said it would lay off about 3,500 of its 35,000 workers. It also fired seven finance executives, continuing a series of management changes that began when Owens was named president and CEO in April [QuickLink 46579].

Owens said last week that he's appointing a vice president of ethics and compliance, but he denied that there's an entrenched culture of wrongdoing at Nortel.

"We will be pure, as pure as I can make this company," he said. 49207

REPORTING DELAY
Nortel again postpones the filing of its restated financial results:
QuickLink 49220
www.computerworld.com

SAP ERP System Uncovers $41M in Accounting Errors

Shipper restates earnings; rollout gets part of blame

BY MARC L. SONGINI

An ongoing installation of SAP AG's financial software at a London-based container shipping firm has exposed flaws in its legacy accounting systems, forcing the company to lower its earnings over the past three years by a total of $41 million.

Officials at CP Ships Ltd. said the SAP rollout itself contributed to the need for the restatement, which was announced last month. Demands placed on business units while the software was being installed early this year led to delays in transferring information between shipping operations and the finance department, making it hard to update cost estimates in a timely manner. The processing of actual cost data was also delayed, CP Ships said.

On the plus side, the company said the SAP applications have delivered new visibility into its financial operations. The installation "revealed some deficiencies in former systems and related business and accounting processes, for which corrective action has been taken and continues," CP Ships said in a statement.

CP SHIPS gained new visibility into its financial operations as a result of its ongoing installation of SAP's software.

The use of the software has also improved financial controls on transactions and account balances, particularly ones involving different internal operating units, said CP Ships. That helped executives identify $8 million in erroneous account balances that had been reported as part of the company's financial results for 2003 and this year's first quarter.

CP Ships rolled out the SAP-based system to five of its seven lines of business in January, Chief Financial Officer Ian Webber said during a webcast briefing about the restatement and the company's second-quarter results. Webber noted that the software has also allowed CP Ships to improve its financial reconciliation procedures.

The company is working to strengthen its accounting operations through steps such as using the SAP applications to speed up the processing of financial data and customer invoices, Webber said.

The applications are scheduled to be installed at the other two business units by early next year, which would put the entire company on common operational and accounting systems. CP Ships said it doesn't expect the last phase of the rollout to result in "any significant transition issues" at the remaining units, one of which is already running an earlier version of SAP's financial software.

Officials at the company declined requests for more information about the SAP project, including the cost of the rollout. "We're still in the process of completing the implementation," said a spokeswoman, adding that further comment would be "a bit premature."

CP Ships Chairman Ray Miles said during the webcast that the company's numbers appeared to be valid until July, in part because of the delays in processing cost data.

To ensure that the new figures were accurate, there was a "huge amount of activity" by the company's audit committee to investigate and nail down the actual results, Miles added. 49225

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Problems Bedevil EDS Case Management Project for U.K.'s Child Support Agency

$806.5M system should be unplugged if flaws aren't fixed, says legislative report

BY MARC L. SONGINI

A child-support case management and telephony system that's expected to cost the U.K. government $806.5 million over 10 years is in danger of being unplugged if the agency overseeing the project can't fix technical and operational problems within the next few months.

The implementation involves a Java-based application that was developed by Electronic Data Systems Corp. for the U.K.'s Child Support Agency (CSA), which oversees the assessment and collection of child-support payments from parents who have separated. The project also includes a companion call center system built by BT Group PLC's consulting and systems integration unit.

The mixed system, which went live 18 months ago, was the subject of a damning report issued in July by the British Parliament's Select Committee on Work and Pensions, the legislative body that's charged with oversight of the CSA.

The complaints about the system include missed rollout deadlines, an inability to add new cases and migrate existing ones to the system, and an "appalling level of service" on telephony, the report said. It noted that about 170,000 child-support cases need to be entered into the system and that the backlog is growing by 30,000 cases each quarter.

The report added that the case management and telephony systems don't work well together, resulting in calls "being routed to the wrong place and cases disappearing from the caseworker's screen as staff try to answer a telephone inquiry."

In the report, the committee recommended that the telephony system be abandoned and replaced if it isn't fully functional by May.

The panel also said that a contingency plan should be readied if the application built by EDS can't fully process new cases by Dec. 1 and the CSA can't guarantee the ability to migrate existing cases by May.

The CSA is part of the Department for Work and Pensions (DWP), which has two months to respond to the recommendations, said Rob Marris, a member of the parliamentary committee. That deadline is flexible, Marris said, but he added that the response will likely be issued next month.

"We are not saying the system should be abandoned come December," Marris said. "What we are saying is the government should draw a line in the sand if DWP cannot come up with a guarantee."

Continuing in Parallel

Because of the technical problems, the CSA is continuing to run its older applications in parallel with the new system, which is known as CS2. Some of the agency's workers still rely solely on the old system, which isn't fully automated and requires heavy use of paper documents. Other employees have been migrated to the new one.

Marris said the troubles on the CS2 project illustrate a general problem with contracts between government agencies and IT services firms. "You don't have enough experts [within agencies], so you can't know about and police what the outside supplier is doing," he said.

A spokeswoman for the DWP confirmed via e-mail that there "have been technical problems with the IT and telephony systems, which we are working on with our supplier, EDS."

Plano, Texas-based EDS declined to comment last week, except to reiterate a statement it issued in late July. "While there have been problems with several aspects of the program, the DWP-EDS team is executing a joint plan to resolve the outstanding IT and business issues," Tom Warsop, managing director of the DWP account for EDS, said in the statement. "The IT system is now delivering a robust service and is constantly improving." 49246

EXCERPT

The slow pace of processing new claims is also unacceptable and represents a very disappointing level of service. . . . The present performance falls some way short of what most people would describe as the proper sense of 'working.'

EXCERPT FROM A REPORT ABOUT THE CS2 SYSTEM BY THE BRITISH PARLIAMENT'S SELECT COMMITTEE ON WORK AND PENSIONS

Federal Audit Raises Doubts About IRS Security System

BY LINDA ROSENCRANCE

Software performance and functionality problems continue to plague a system designed to detect hacking and other unauthorized activities on computers at the Internal Revenue Service, according to auditors within the U.S. Department of the Treasury.

The problems are limiting the ability of business managers and IT security workers at the IRS to identify improper uses of new applications that provide online tax services and information about refunds, the auditors said in a report issued last month by the Office of the Treasury Inspector General for Tax Administration.

The auditors themselves have also been unable to use the Security Audit and Analysis System (SAAS) to check whether IRS employees are accessing taxpayer data without authorization, according to the Treasury Department report.

It added that the problems call into question whether the IRS should proceed with its IT modernization plans.

"Not having an effective audit-trail review process is a significant security weakness that should weigh heavily on whether to accredit future modernization applications," the report said.

According to the report, the auditing system collects information about application usage and stores it in a central database. Users should then be able to tap the audit trail data to generate reports and run ad hoc queries in order to determine whether any improper activity has taken place and reconstruct how it happened.

SAAS was developed for the IRS by Computer Sciences Corp., which delivered an initial version of the system in late 2002. But the software problems are preventing users from accessing the database, the Treasury Department auditors said in their report.

Aware of the Problems

The inspector general's office claimed that the IRS was aware of the problems from the outset but accepted delivery of SAAS with the stipulation that CSC would address the deficiencies. The problems still haven't been fully resolved, the report said, adding that the IRS also hasn't developed internal operating procedures for reviewing the data collected by SAAS.

However, Daniel Galik, chief of mission assurance for the IRS, said in a written response to the report that SAAS met all defined requirements and passed all tests before it was accepted. Galik wrote that the IRS is taking steps to correct the system problems and expects all the major components of SAAS to be fully functional by the end of October.

He deflected a recommendation by the inspector general's office that the IRS develop alternatives for reviewing application audit trails in case the problems with SAAS can't be fixed. The agency is prepared to commit more resources to ensure that the system can be used effectively, Galik wrote.

The SAAS document was the third report about IT shortcomings at the IRS issued by the inspector general's office in recent months [QuickLink 48391].

An IRS spokesman said the agency had no comment beyond Galik's response. El Segundo, Calif.-based CSC, the prime contractor for IT modernization projects at the IRS, declined to comment on the SAAS report. 49206

A Taxing Situation

The inspector general's office said that because of the system problems:

- **IRS business units** can't use SAAS to identify questionable activities on the agency's e-Services and Internet Refund Fact of Filing applications.
- **Workers in the IRS's Computer Security Incident Response Center** are unable to access the system to detect possible network intrusions.
- **Treasury Department auditors** can't use the system to investigate whether unauthorized IRS employees have accessed taxpayer information

BRIEFS

Two Flaws Found In Kerberos Code

The Kerberos development team at MIT released software patches designed to plug a pair of security holes in the network authentication protocol. The researchers gave a "critical" severity rating to one of the flaws, a so-called double-free vulnerability that attackers could use to execute code on systems running MIT Kerberos 5. The other flaw could be used to launch denial-of-service attacks and was rated "serious."

Veritas to Acquire Archiving Vendor

Veritas Software Corp. said it has agreed to pay $225 million in cash to buy KVault Software Ltd. (KVS), a U.K.-based vendor of e-mail archiving applications for Exchange users. The deal will be completed this month, said Mountain View, Calif.-based Veritas. KVS, which had revenue of $23 million last year, will become a separate unit within Veritas.

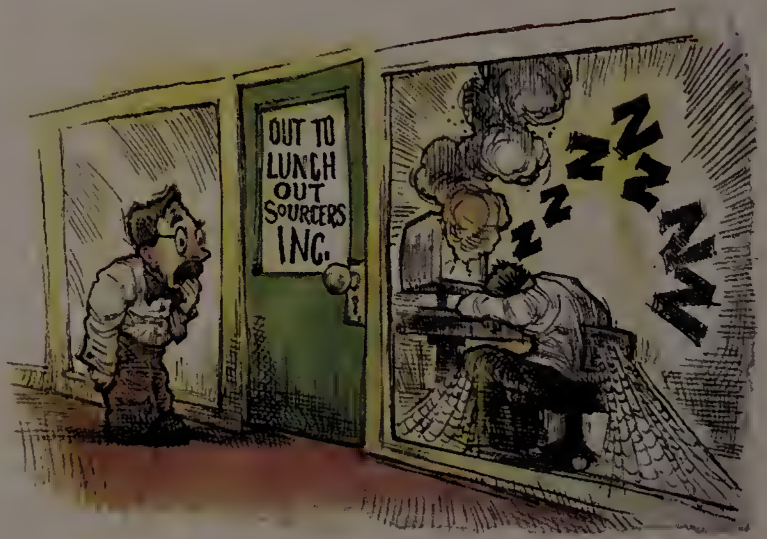
AMD Shows Off Dual-Core Chips

Advanced Micro Devices Inc. demonstrated its first dual-core processors and said they should be available for use in servers by mid-2005. The devices, which put two processor cores on a chip, will fit into systems built around AMD's Opteron processors. The demonstration preceded this week's Intel Developer Forum, where Intel Corp. will discuss its plans for dual-core chips.

IBM, Intel Open Specs for Blades

IBM and Intel said they're opening up the design specifications for a jointly developed line of blade servers to vendors that want to build supporting products, such as switches and adapter cards. But other companies still can't clone the blade servers, which IBM sells as its BladeCenter line.

[ON THE MARK | HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL]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MATTHEW FAULKNER

Pop by Your Service Provider in the . . .

. . . wee hours of the morning to prevent a data disaster. Good advice, especially when it comes from the CEO of a Web hosting company who thinks your mission-critical online operations are at risk if you use offshore services or even U.S.-based ones that clock out after sunset. "Go visit your hosting company at 3:00 in the morning and see if someone answers the door," suggests Mitch Gervis, the top executive at Dallas-based NeoSpire Inc. "Do it before you have a disaster." If your Web site delivers critical business functions 24 hours a day, the last place you want it is someplace whose systems administrators are all asleep in their beds at night, says Gervis, whose company hosts sites for Lowes Cineplex Theatres Inc., United Way of America, the Federal Reserve Bank of Dallas and other users. Gervis argues that all the sophisticated remote diagnostic and management tools in the world can't supplant a smart human on the premises. He adds that users shouldn't just demand that data be backed up and restored for free, which he says NeoSpire does. They actually should request backups to verify that the hosting company's procedures work. NeoSpire does five to 10 data restores a week at the request of users, for example. And being a Southerner steeped in the region's tradition of hospitality, Gervis invites you to drop by his data center — anytime.

Protect Your IP From Offshore . . .

BALAJI warns of offshore coding practices.

. . . developers who slip open-source code into your applications. It's not that Indian, Chinese or other programmers based outside the U.S. have malicious undermining of your intellectual property in mind, says Sridhar Balaji, CEO of SourceSentry Inc. in Houston. It's just that it's so easy to do. "Oftentimes, developers just grab something on the Web and put it in their code," Balaji says. His company has run scans of applications and discovered open-source elements. Inserting open-source code could upset your licensing plans, particularly if you intend to distribute your software but keep the source code proprietary. SourceSentry offers its Biz-Century Methodology templates for ensuring that your offshore team follows strict security, privacy and best-practices procedures that go beyond standards such as BS 7799 [QuickLink 49098]. Balaji claims that there are thousands of start-up outsourcing companies in India alone, most of which need better controls. So choose wisely.

Paying for Middleware Is Soon . . .

FLEURY: Don't pay for middleware.

. . . to be a distant memory. That's if Marc Fleury gets his way. He's the CEO of Atlanta-based JBoss Group Inc., which offers an eponymous open-source application server that competes with BEA Systems Inc.'s WebLogic, IBM's WebSphere and other commercial products. "Everything is game in middleware infrastructure," he says. Such as? Portals, workflow tools, connectors, messaging technology and more. He claims that JBoss will soon supply open-source tools across the entire middleware spectrum. What happens then? "The market can't sustain both open-source and proprietary technologies," Fleury says. And you can guess which one he thinks will win. Some venture capitalists obviously agree. They just poured $10 million into JBoss, something that wouldn't have happened a few years ago. Fleury recalls that when he presented the same ideas to a venture capitalist in 2000, he was told it was "not just a bad business plan — it was a horrible one." He now laughs at the memory — all the way to the bank.

JBoss, Tomcat, MySQL, Eclipse, Ant . . .

. . . and 95 other open-source technologies can be automatically installed, configured, integrated and maintained by BlueGlue from OpenLogic Inc. in Highlands Ranch, Colo. The GUI-based tool is sold for $399 per system as a subscription service. It needs to be installed on each machine, but the company says a new version due in the first quarter of 2005 will be able to be deployed across multiple machines from a single console. The top 100 open-source tools are fully evaluated to ensure complete integration, and tested updates are supplied to users through the service, OpenLogic says.

Software Seeks to Stop Spyware at . . .

. . . the source by certifying that Web sites and downloads are free of the insidious programs. Rick Carlson, president of Aluria Software LLC in Lake Mary, Fla., says that the company on Friday will unveil its certification program for spyware-free software to assure users that what they download from your site doesn't contain keyloggers, adware and other nasty code. The certification program is free and works like those from VeriSign Inc. and Truste, which give online visitors confidence about a Web site's integrity. Carlson claims that spyware is more than a nuisance to IT and is the No. 1 reason for poor PC performance and crashes. Join now while the price is right.

91% of PCs have spyware, says the National Cyber Security Alliance.

49241

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BRIEFS

SCO Reports Loss, Caps Legal Costs

The SCO Group Inc. reported a $7.4 million loss for its third quarter and said it has signed a deal to cap the legal costs of its anti-Linux campaign at $31 million. "The litigation business is now in control from a cost standpoint," said CEO Darl McBride. The cap agreement between Lindon, Utah-based SCO and Armonk, N.Y.-based Boies, Schiller & Flexner LLP entitles the law firm to a larger percentage of any settlement or award that SCO gets from its lawsuit against IBM.

Manugistics Shows President the Door

In a filing to the U.S. Securities and Exchange Commission, Manugistics Group Inc. said it terminated the employment of President Jeremy Coote effective last Tuesday. The move came just a month after Rockville, Md.-based Manugistics hired Joe Cowan as CEO. Coote joined the supply chain software vendor in June 2003 after working at SAP AG and Siebel Systems Inc.

VeriSign Files New Suit Against ICANN

After losing a federal court battle to the Internet Corporation for Assigned Names and Numbers, VeriSign Inc. has filed a breach-of-contract lawsuit against ICANN in Los Angeles Superior Court. VeriSign claims that ICANN violated the terms of an agreement giving VeriSign control of the .com domain registry. ICANN declined to comment on the suit.

Dell Adds Color To Its Printer Line

Dell Inc. announced its first self-branded color laser printers, adding three models to the product line it rolled out 18 months ago in an effort to lure users away from Hewlett-Packard Co. Prices range from $449 to $999.

F5, Redline Expand Technology For Speeding App Performance

Software upgrades work with switches to increase throughput for end users

BY MATT HAMBLEN

F5 NETWORKS INC. plans to announce an upgrade of its application traffic management software tomorrow, the same day that rival Redline Networks Inc. is due to release a tool that's designed to help IT managers limit the need to install more application and Web servers.

Both products fall into a category that analysts call "Web-enabled application delivery" or "application front ends." F5, Redline and other vendors offer appliances that usually consist of specialized switches running software that can speed up applications and make them more secure.

F5's software upgrade, called Big-IP Version 9 and code-named Buffalo Jump during development, took nearly three years to develop and includes a new traffic management operating system, said Erik Giesa, vice president of product marketing at the Seattle-based company. The software runs on three new appliances that are priced from $17,000 to $35,000.

Setting Priorities

Big-IP supports traffic management functions such as data compression, load balancing and Secure Sockets Layer acceleration. New features in Version 9 offer "rate shaping" capabilities that should help IT managers make sure bandwidth is available for high-priority applications, Giesa said.

Northwest Multiple Listing Service in Kirkland, Wash., has seen a demonstration of the upgraded software and plans to buy two of F5's new high-end 6400 Series IP Application Switch appliances for delivery in February, said Raymond Williams Sr., a network developer at the real estate listing service.

The service has been using Big-IP Version 4.5 for three years, but Williams said a new user interface in Version 9 should simplify administration "by far." And with 20,000 real estate agents in Washington state using the service via the Internet, the upgrade could help him set up rules to make sure certain applications get high priority. In addition, a new function called iRules could make it possible to ensure that the largest brokerages get guaranteed access to the listings, Williams said.

The application delivery products now on the market have been far too complex, said users and analysts. But F5's focus on a simpler user interface doesn't mean its new offerings are any less complex, said Mark Fabbi, an analyst at Gartner Inc. "These devices do an increasing amount of functions, and the amount of expertise needed to run them is increasing," Fabbi said.

F5 Networks' 6400 Series IP App Switch

- Runs the company's **Big-IP software** and provides maximum data throughput of **2Gbit/sec.**
- Includes **16 Gigabit Ethernet** copper ports, plus two standard and two optional **fiber ports.**
- Is based on **dual processors** and provides **three slots for PCI** add-in cards.
- **Price:** $35,000

Campbell, Calif.-based Redline said its new 3G Cache software offloads frequently used data from servers to speed up processing. The software starts at $5,000 and runs on Redline's E/X 3250 appliance, which costs $33,000.

F5 and Redline compete with major switch makers like Cisco Systems Inc. and Nortel Networks Ltd., as well as smaller ones such as Radware Ltd. in Mahwah, N.J., and Netscaler Inc. in San Jose. Fabbi said worldwide sales of the application-boosting technology exceeded $500 million last year.

Officials at Redline, Radware and Netscaler all said they offer functions that F5 is introducing in its new product, although Lynn Nye, an analyst at APM Advisors in Portland, Ore., said Radware still provides the features in separate boxes. **49229**

BMC Adds Tool to Track Batch Jobs

BY MATT HAMBLEN

Management tools vendor BMC Software Inc. tomorrow will unveil an application designed to help IT managers identify and respond to problems in batch-processing jobs.

The Batch Impact Manager software tracks batch data flows and can notify data center workers of potential delays, said Gur Steif, director of application management at Houston-based BMC. If batch processes fail, IT managers can restart the ones that are most important first.

Cambridge Integrated Services Group Inc. in Cranbury, N.J., has been using Batch Impact Manager for the past three weeks, primarily to help process workers' compensation claims, said Laurie Kenley, the company's production control coordinator.

IT staffers have to ensure that batch jobs for check processing and data warehousing are completed within a tight schedule mandated by service-level agreements between Cambridge and its customers, Kenley said.

"Long runtimes and delayed start times can throw our whole production cycle out of whack, and it can be very difficult to catch this before our deadlines will be missed," she said, noting that Cambridge also faces fines if it fails to meet state government deadlines for issuing workers' compensation checks.

Batch Impact Manager runs on top of BMC's Control-M batch management software, which Cambridge already used. Control-M gives Cambridge's IT staffers insights about individual batch jobs, but Kenley said Batch Impact Manager can monitor multiple batch data flows. She added that it "helps me correct an issue that was driving me nuts: How the heck do you monitor for 'what if'? Now I can."

"It's not at all unusual to have many batch jobs that must finish on time, and if there's something wrong early in a 10-hour processing window, you can have a real problem," said Rich Ptak, an analyst at Ptak, Noel & Associates in Amherst, N.H.

He added that large banks and insurers often use custom software to provide functionality similar to what's in Batch Impact Manager. Users would need to weigh whether converting from their current software to BMC's would be cost-effective, Ptak said. **49219**

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Health Care Firm Aims To Curb Printer Costs

Expects three-year, $15M deal with HP to yield efficiencies

BY TODD R. WEISS

CLEVELAND-BASED University Hospitals Health System last week said it's wrapping up a project with Hewlett-Packard Co. that will reduce the number of printers it uses by more than 60% and slash the total count of different models its IT staff has to support from 78 to just 12.

The printer consolidation moves are being done under a three-year, $15 million contract that HP and UHHS signed early this year. UHHS expects to lower its printing and imaging costs by $1 million to $2.8 million per year, according to Marc Richards, a divisional information officer who is responsible for the health care provider's IT infrastructure, including its data centers, PCs and peripherals.

UHHS, which operates more than 150 medical facilities in northern Ohio, had an installed base of about 3,300 printers for its 11,000 users before the consolidation project began, Richards said.

He added that the company was using printers from HP and 11 other vendors, causing nightmares for its technical support and help desk staffs and complicating efforts to keep replacement cartridges and parts in stock.

An audit conducted by HP found that too many printers were being used, increasing operating costs and workloads for support staffers, Richards said. He said that over the past eight months, UHHS has standardized on HP printers and chopped the number it has in place to about 1,250.

A Daunting Task

The number of facilities that UHHS owns made the task a daunting one, and Richards said it wasn't easy to get approvals throughout the company for replacing all of the existing printers.

"It took a long time to gain acceptance within the operational units," he noted. "Had HP not done their education with us, we would never have been to this point. On our own, to set up an operation like this? No way."

The new hardware includes multifunction devices supporting both printing and copying, monochrome and color HP LaserJet workgroup printers, and print server appliances, according to the two companies. IT administrators at UHHS are using software utilities built into HP's printers to remotely monitor and control the printing systems and automatically reorder supplies only when they're needed.

UHHS reduced the number of printers in use at its 150 medical facilities by more than 60%, to about 1,250.

HP, which also provides desktop computers and storage devices to UHHS, formed its Total Print Management services unit about 18 months ago. Last spring, the vendor announced a printer outsourcing deal with Ford Motor Co., which hopes to reduce its printing costs by as much as 30% [QuickLink 46749].

"Most customers don't know how many printers they have," said Dave Arndt, worldwide program manager for print management services at HP. "We're really at the beginning of this — kind of where PCs and servers were about eight years ago, when people would buy them and didn't think of managing them." 49252

Continued from page 1

IT Spending

next 18 to 24 months, said Forrester analyst Tom Pohlmann.

"Many CIOs are coming around to see that it takes some investments in better price/performance platforms, such as new blade server technologies that are starting to hit the market, to cut costs over the long haul," Pohlmann said.

Robert Schwartz, CIO at Matsushita Electric Corporation of America's Panasonic division in Secaucus, N.J., said that some companies seem to be more willing to invest in IT as the economy shows signs of improvement. He added that he thinks corporate executives are also starting to get past concerns that their companies overinvested in technology during the dot-com boom and the Y2k remediation effort.

"This will fuel some level of growth, but it will be tempered by selecting only those initiatives which meet ROI requirements," Schwartz said. Panasonic's fiscal year begins April 1, and the company won't finalize its IT budget for the next one until December. Schwartz estimated that its IT spending could grow by as little as 4% or as much as 7%.

Growth Forecasts

Analyst firms' predictions of IT spending increases in 2005:

Forrester Research	7%
IDC	Less than 7%
Gartner	4%
Meta Group	Flat to 3%

Spending predictions by market researchers for next year are also mixed (see chart). "We're not seeing CIOs becoming more optimistic about revenue growth and IT spending," said Howard Rubin, an executive vice president at Meta Group Inc. "No one wants to be hamstrung and spend more on IT and then have the economy collapse."

Instead, Rubin said, users are shifting around their IT investments. Last year, companies spent an average of about 65% of their IT budgets on "run the business" work and the remainder on new projects, according to Rubin. This year, many have tried to lower IT infrastructure costs to closer to 50% of their budgets and pump more money into new projects, he said. "Companies aren't spending more on IT; they're just spending it differently," Rubin said.

Hilton Hotels Corp. still allocates slightly more than 65% of its IT budget to supporting business operations, said Damien Bean, vice president for corporate systems at the Beverly Hills, Calif.-based lodging company.

Hilton's IT budget is likely to grow 5% next year, Bean said, although that includes the costs of supporting the planned opening of more than 140 new hotels. He added that savings Hilton has achieved through IT efficiency gains this year will be channeled into sales systems and security technologies next year.

But Bean said Hilton has standardized most of its hardware on Intel-based systems and has "already captured the benefits of commodity hardware and nonproprietary maintenance fees, all of which makes our cost structure extremely competitive but limits year-over-year savings."

IT spending at The Guardian Life Insurance Company of America is expected to grow 3% next year, driven by a 9% increase in infrastructure investments to accommodate upgrades to the New York-based insurer's disaster recovery and security capabilities, CIO Dennis S. Callahan said.

J. Edward Clary, CIO at Haverty Furniture Cos. in Atlanta, said he won't know what his IT budget will be for 2005 until mid-November, when the company's board makes its final approvals. But he does know that the budget won't be smaller than it is this year. "It would be too hard for us to recover if we tried to cut back on our infrastructure investments," Clary said. 49247

Continued from page 1

Tech Workers

and 2008. "There'll be a little pickup in hiring next year, but salary and benefit growth will remain flat," said Forrester analyst Tom Pohlmann.

IT staffing levels aren't expected to change at Guardian Life Insurance next year, said CIO Dennis S. Callahan.

Robert Schwartz, CIO at Panasonic, also said he doesn't expect to expand his IT staff during 2005. Instead, he said he plans to increase Panasonic's reliance on domestic and foreign IT contract workers.

But that type of approach could raise public relations problems for U.S. companies. And as corporate executives face increased pressure to retain IT work stateside, many firms will try to "bury their offshore activities" by means of creative accounting, said Howard Rubin, an executive vice president at Meta Group. "A company might say publicly that they only have 5% of its employees offshore, but they can have thousands of contractors overseas," he said.

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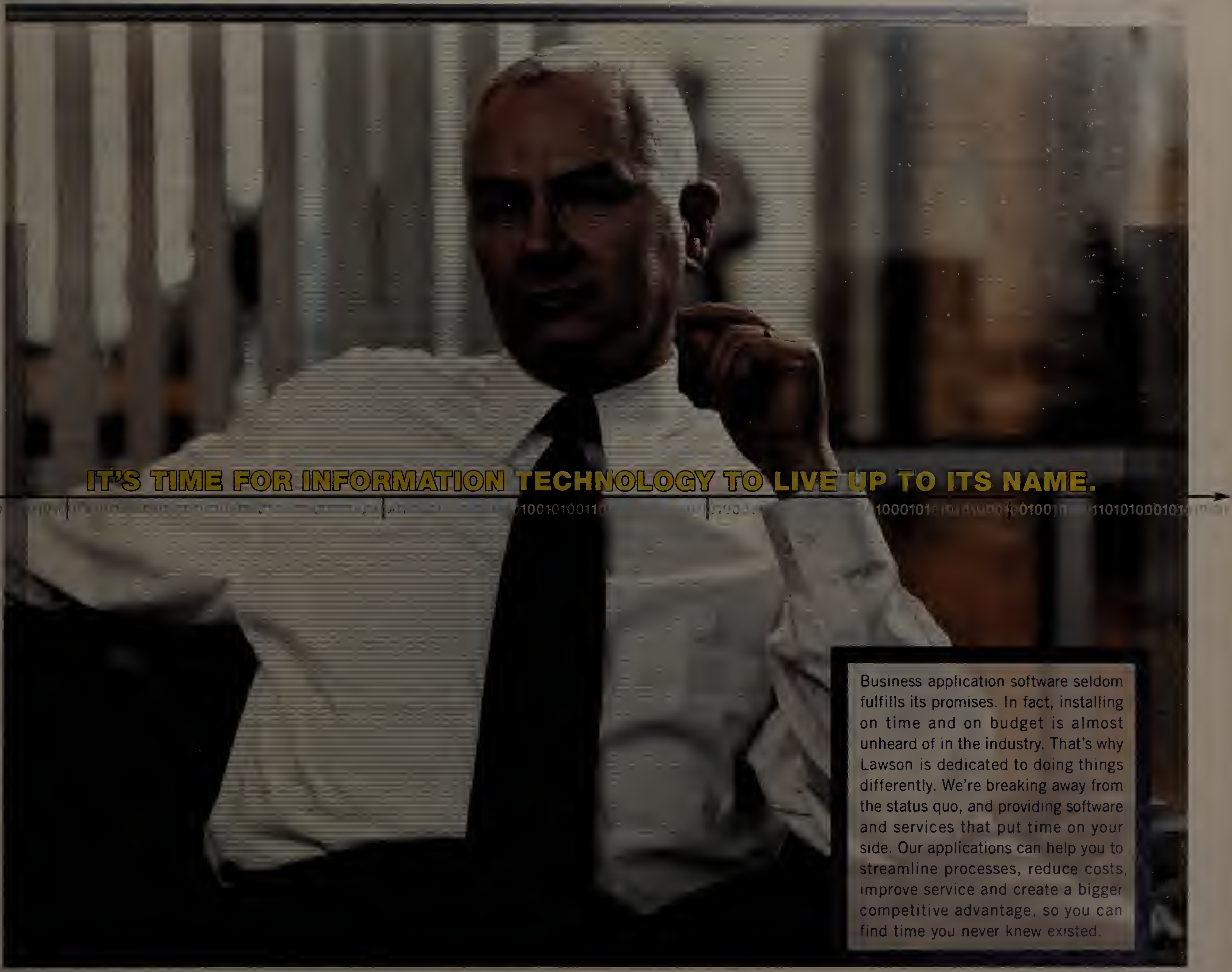
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MARYFRAN JOHNSON

Embracing Change

I DID THE CRAZIEST DAMN THING last week. I quit this wonderful job as *Computerworld*'s editor in chief and signed up to be the top editor for an emerging business unit at another publishing company. As I sit here writing my last editorial, I'm almost as stunned about it as my staff is. I feel like I'm living that sardonic *Dilbert* one-liner: "Change is good. You go first."

MARYFRAN JOHNSON is *Computerworld*'s former editor in chief. She can be reached at maryfranjohnson@[illegible].com.

I just never thought I would.

I've spent 15 very happy years at *Computerworld*, the past five as its chief editor. I've traveled a path from reporter to News editor to executive editor to editor in chief and company executive, and throughout it all, I've been a relentless cheerleader for our venerable brand, our editorial integrity and our award-winning staff. Always the biggest fan of our readers. Always loving what we do here.

None of that affection has changed. But along came change itself in the guise of an unexpected opportunity to create something entirely new. And I found I couldn't resist the invitation. I suddenly had to go first, despite my sorrow about leaving such a great publication. There was some joy, however, in seeing that new jobs and opportunities are flourishing once again in the IT publishing industry, which has limped along with the technology sector as we've all endured the economic downturn.

Change is unsettling, but it really can be a good thing. I offer as Exhibit A the way it opened up new opportunities for several talented *Computerworld* editors last week.

Our new editor in chief is Don Tennant, whom many of you already know as the accomplished moderator of CIO discussion panels at several of our past Premier 100 IT Leaders conferences. You've also seen the results — each week in these pages — of Don's work as our outstanding News editor. Under his direction, our reporters have earned more than 100 journalism awards from the American Society of Business Publication Editors, including the ASBPE's Magazine of the Year award earlier this summer.

With Don's promotion comes a change for assistant News editor Craig Stedman — a legendary reporter in our newsroom, perhaps best known for his unrelenting, in-depth coverage of failed ERP projects in the late '90s. Craig now takes over as News editor.

Also taking on a new position here is our Features editor, Mitch Betts, who last week was promoted to executive editor. This change expands Mitch's responsibilities to oversight of News operations as well as our Technology and Management feature sections. Those of you who are fans of our monthly Knowledge Centers have seen Mitch's fine work as the chief architect of this ongoing series of in-depth technology and business special reports.

Finally, we have a new editorial leader for *Computerworld*'s Premier 100 conference in Julia King, whose distinguished work as our national correspondent has consistently made its mark on our management, career and outsourcing coverage. Julia has also played a key role in the development and growth of the Premier 100, now entering its sixth year as the largest IT executive conference in the industry.

As news of my departure spread last week (a minor tempest in our media teapot), I was flattered to hear from so many of our readers and friends throughout the industry (some humorously inquiring about my mental health). But not to worry. I know our paths will cross again, and I leave you in very good hands.

Change is good. I'll go first.

49216

MICHAEL H. HUGOS

Something Bigger Than The Next Big Thing

IN THE PAST YEAR or so, an idea has been steadily working its way from the back of my mind to the front. This idea is starting to seriously influence the way I see my job as well as my participation in the IT profession. It starts with an observation: We in IT are still playing that goofy game of inventing TLAs (three-letter acronyms). The problem with this is that the proliferation of TLAs just distracts us from appreciating a larger opportunity and draws us down narrow alleys in search of the next insanely great new thing.

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TLAs — BPR, GUI, OOP, ERP, CRM — and great new things dominated IT in the 1990s. Some of those TLAs hit the big time, and lots of money changed hands because of them.

But that time is over. I don't use TLAs in conversation with my C-level peers, or with anybody outside of IT for that matter. Five or six years ago, sprinkling our conversation with TLAs might have made us sound important; today, it just makes us sound like dorks.

Because TLAs cause us to obsess over relatively small pieces of the total picture, we don't see the incredible opportunity that's staring us in the face. Let's imagine that we do some BPR and then we support those new workflows with systems that use EAI and SOA to tap into the functionality of existing ERP, CRM and other systems. New systems built this way can be assembled very quickly. Next we apply BPM or BAM to those new systems and workflows. Now, moving beyond the acronyms, a truly amazing thing can occur.

If done right, these systems enable people to see their world in real time. Suddenly, they know what's going on day to day. They don't have to wait until two weeks after the monthly close to get good numbers. And because they can see clearly, they can act effectively. As they act, the systems send back real-time pictures of the results of their actions. Then they act again. And so on.

This sets up a powerful feedback loop where people learn fast and get better and better at what they do. This phenomenon is at the heart of what is called "the real-time enterprise." Organizations that start operating as real-time enterprises become like athletes who get more skillful as they play the game.

The real-time enterprise is to the information economy what the assembly line was to the industrial economy. It will be the great generator of wealth in the 21st century. Think about it: Industrial technology was in wide use by the mid-1800s, but the idea of using it to support a certain workflow process called the assembly line didn't catch on until the early 1900s. After companies did begin to organize production using the assembly line, the resulting productivity gains drove much of the economic growth in the 20th century.

Information technology has been widespread for the past 40 years or so. The technology itself is no longer a source of advantage. But the technology can be used to support a process called the real-time enterprise.

The real-time enterprise builds upon the efficiencies of the assembly line and then goes far beyond what an assembly line can do. It gives companies the ability to learn faster and respond more effectively than ever before.

In a world of constant change, the organizations that are the best at constantly adapting and improving are the ones that will thrive. They are the ones that will define the economy of the 21st century.

But we aren't going to convince management of this larger opportunity by telling them what we're going to do with BPR and SOA and ERP and CRM. Instead, we need to show them how IT can put all the technology together and lead in the creation and operation of systems that enable the real-time enterprise to come into being.

48852

THORNTON A. MAY

Bright Skies or Dark Path for IT Leaders?

CURRENT THINKING on the future career path of IT leaders is polarized. The Lawson Software-sponsored "Habitat Report" has identified two fundamentally different expected career outlooks for executives leading IT organizations. One scenario, dubbed "Bright Skies," predicts an enlarged and increasingly admired role in the enterprise. The "Dark Path" scenario, on the other hand, predicts that IT leaders will face tough sledding in the years to come.

Those in the Dark Path camp posit that the role of the IT leader is diminishing in importance. This school of thought holds that computational functionality is becoming (or has already become) a commodity that can be purchased, provisioned and managed via rules-based logic. Dark Pathers forecast a bleak future for IT in which rules-based work is outsourced and the managing of rules-based work is automated via CIO-in-a-box artificial intelligence systems at the order of chief financial officers.

THORNTON A. MAY is a longtime industry observer, management consultant and commentator. Contact him at **thorntonamay@aol.com.**

The few carbon-based life forms left in place will oversee outsourcing contracts, apologize for unmet service-level agreements and go to jail for catastrophic system failures. In the minds of Dark Pathers, IT leaders are losing power vis-à-vis the CFO.

The data about whom CIOs report to is ambiguous:

	CEO	CFO	OTHER
[illegible]	38%	28%	34%
[illegible]	30%	32%	38%

Taken at face value, the fact that fewer IT leaders today report to CEOs might lead one to believe that IT power is diminishing, but I tend to attribute the change in this number to two things: the e-commerce frenzy at the turn of the decade, and a change in top-of-house management styles. In 1999, the CEO managed a series of one-to-one relationships with his direct reports. In the new model, because of an increasing interconnectedness among all functions, the CEO manages the executive team. Those on the executive team, of which the IT leader is one member, manage relationships among themselves. Today, there is a growing tendency for the CIO to report to the chief operating officer.

Bright Skiers acknowledge and applaud the trend toward automating and outsourcing rules-based IT work. The Bright Skies scenario is driven by the assumption that the ever-expanding computational functionality identified by Moore's Law will affect what work gets done and how. Their hopeful outlook is predicated on the principle that realizing the full potential of technology investments requires that two things get done. The first of these is reorganizing existing work into rules-based, been-there-done-that Six Sigma routines. The second is implementing new patterns. In other words, working in uncharted territory is the high ground for IT leaders of the future.

In their brilliant new book *The New Division of Labor: How Computers Are Creating the Next Job Market* (Princeton University Press), Frank Levy and Richard J. Murnane write that the future belongs to people who excel at expert thinking (solving problems for which there are no rules-based solutions) and complex communication (interacting with people to acquire information, understand what that information means and persuade others of its implications for action).

Dark Pathers are working off the flawed assumption that most IT activity is rules-based. It is not. The IT leader of the future is going to be a world-class workplace diagnostician who is facile at understanding work and will strip pieces of work best done by computers (the rules-based drudgery) out of the hands of humans, streamline operations and imagine new, high-margin things to do with computational functionality. 49126

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READERS' LETTERS

Offshoring: Unwise or Simply Inevitable?

THANK YOU for Virginia Robbins' interesting article "The Ragged Edge of Outsourcing" [QuickLink 48217]. As a former senior software engineer who, because of outsourcing, was forced into a middle-age career change, I find it refreshing to see someone question the wisdom of outsourcing. The Bureau of Labor Statistics recently reported a decline of 131,000 employed computer software engineers in the second quarter compared with the first quarter, bringing the total to just 725,000.

What is particularly galling is that by the time CEOs and CIOs realize that outsourcing isn't the panacea they think it is, the software engineering profession in America may no longer exist.

James Marino
Mesa, Ariz.

MY ADVICE to the authors of the three letters on July 26 bemoaning offshoring is to get over it and move on. Offshored jobs will no more come back than deceased relatives. In fact, we can expect even more IT jobs to be offshored in the very near future. I am 53 years old with 15 years of IT experience. Between 2000 and 2002, I worked on the average six months per year, and between 2002 and 2004, only four months. I have not worked at all this year. After feeling angry, frustrated and betrayed, I returned to graduate school, where I am now pursuing a master's in teaching English as a second language.

Globalization has made education a booming industry, especially in the Third World. I hope to teach English in China, where the economy is sizzling and the job opportunities for English teachers are red hot. The pay is good by Chinese standards, and if I do not like it there, I will move on to another country.

Here in Chicago, most of the people in my neighborhood are foreign-born. There are literally millions of legal and illegal immigrants in this country seeking work. Why can't we Americans do likewise and look beyond our borders for opportunities?

Julius Takacs
Chicago
Julius_Takacs@hotmail.com

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TECHNOLOGY

09.06.04

Agents of Change

Autonomous agents promise to make everything from supply chains to telecommunications networks more efficient. But for now, most new applications remain in R&D labs and testbeds such as NASA's Earth Observing-1 satellite. **Page 24**

Survival of the Fittest

A regression-based analytic technique called survival analysis is moving from life sciences and engineering into mainstream business applications such as CRM, enabling companies to predict the behavior of their customers. **Page 27**

SECURITY MANAGER'S JOURNAL

Secure E-mail Stops At Corporate Borders

Providing internal e-mail security is one thing, but Roger Foix finds there are few good options for securing the e-mail that's exchanged with business partners. **Page 32**

HAVE JINI, WILL TRAVEL

Orbitz put Sun's underappreciated technology at the core of the distributed computing framework that powers its online reservation systems. **BY CAROL SLIWA**

JINI was still being marketed as a networking technology for consumer appliances such as DVD players and televisions when startup Orbitz Inc. made the rather bold decision to build its business on the fledgling Java-based specification.

Forged in 2000 by five airlines, Chicago-based Orbitz had a blank technology slate when it elected to look beyond Sun Microsystems Inc.'s consumer hardware pitch and explore Jini's potential as a distributed computing framework for its online travel services. Orbitz architects knew that few companies were using Jini, but they were comforted to learn that one, Raytheon Co., was exploring the technology for systems on U.S. Navy destroyers.

"If it's good enough to protect lives and countries, maybe it's good enough to sell tickets on," says Leon Chism, Orbitz's eighth employee and now chief Internet architect.

A CORBA Alternative

Skilled in building large-scale systems based on the Common Object Request Broker Architecture, the Orbitz development team saw Jini as a CORBA alternative that would provide a mechanism for acknowledging the effect the network has on how a system is designed and runs in production, says Chism.

"You had a group of people that felt technically capable and qualified to make it work," adds Chief Technology Officer Chris Hjelm, who joined Orbitz from eBay Inc. in July 2003. "They've always been independent thinkers, and they wanted to control their own destiny."

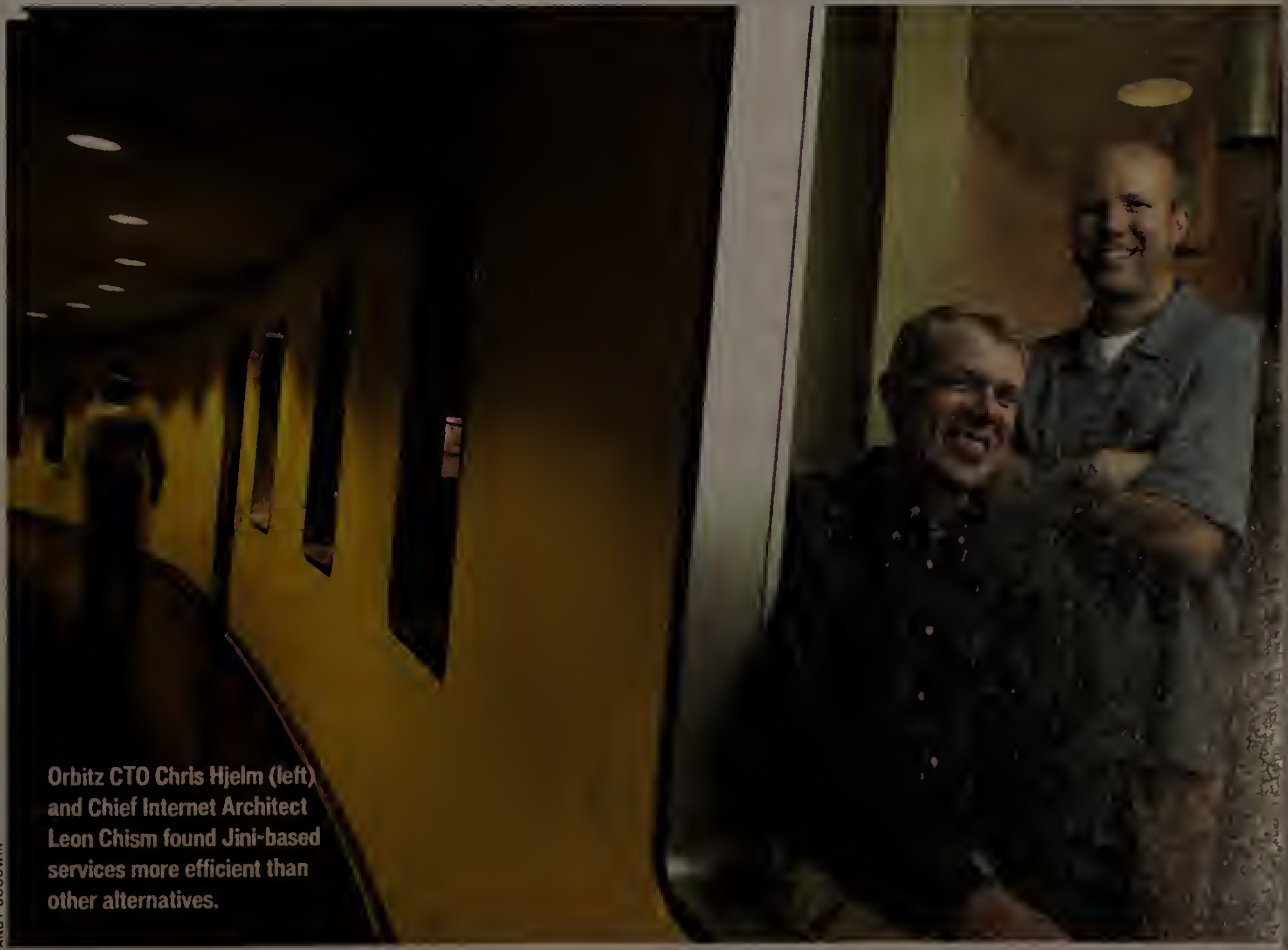
Orbitz also considered using the emerging Enterprise JavaBeans (EJB) technology but soon scrapped that idea because of concerns about performance, management and cost. Company architects figured they wouldn't require the transactional capability of EJB and decided that dynamically networked Jini services would be a better fit.

"If you compare

DEFINITION

JINI

A set of specifications created by Sun Microsystems to describe how to build Java-based distributed systems that are adaptive to change. Sun contributed the technology to the Jini Community in 1999.



Orbitz CTO Chris Hjelm (left) and Chief Internet Architect Leon Chism found Jini-based services more efficient than other alternatives.

ANDY GOODWIN

AT A GLANCE

How Orbitz Uses the Jini Architecture

LAYER 1

Presentation/State/Persistence

A customer request comes in via a Web application or telephone interactive voice response system. It passes to an Apache Web server and then to a BEA WebLogic Java servlet container, called the Jini client, which is the consumer of the Jini service. That client uses the Jini discovery protocol to find the desired Jini lookup service.

LAYER 2

Jini Lookup Services

Redundant instances of Jini lookup services find the Jini service(s) that can meet the customer's request and send a proxy back to the Jini client. The business logic in this layer is responsible for routing, coordination and fail-over to find the best mainframe in Layer 3 to service the request.

LAYER 3

Supplier-Specific Services

Third-party mainframes from WorldSpan, Pegasus and Orbitz's internally hosted J2EE-based inventory systems run on the back end, transformed into Jini services through Java-based interfaces that register with the Jini lookup service.

---

how to define and access an EJB remotely versus how to do that in Jini, it's orders of magnitude different in terms of lines of code and complexity of the code," says Chism.

"I think I can actually publish a Jini service in about three lines of code. And accessing it is probably two lines of code," says Steven Hoffman, principal software engineer at Orbitz. "Most of the people that actually know and need to know about the Jini infrastructure, you can count them on your hand. Everybody can focus on the real work at hand. The plumbing doesn't get in the way."

Building a service-oriented architecture to get disparate systems to interoperate isn't such a newfangled idea today, but at the time Orbitz decided to break up applications into services, its architects weren't familiar with the terminology. They just knew that customers would need to book flights, hotels and cars. To enable that, they needed to connect to a major mainframe-based global distribution system (GDS) for booking and ticketing flights and cars. For hotels, they had to link to a system from Pegasus Solutions Inc. And they knew they had to build a system that wouldn't go down.

Under the Orbitz architecture, a customer request to book an airline ticket passes to a Java servlet container — the Jini client — running on BEA Systems Inc.'s WebLogic application server (see box above). The Jini client uses the Jini discovery protocol to find a Jini lookup service, which sends a proxy back to the Jini client. Through the proxy, the Jini client uses the lookup service to find a Jini service that can do what it needs. The lookup service then delivers the Jini service proxy back to the Jini client, and the client uses the proxy to communicate directly with the Jini service.

Orbitz registers its 1,332 Jini services on multiple instances of lookup services for redundancy, so there's never a single point of failure in the event of a power supply or hard drive failure. It also builds redundancy into the servlet containers and the services themselves, scaling horizontally through Intel-based dual-processor PCs running Linux. The PCs act as servers in the Orbitz environment. "It's not just redundancy; it's also capacity," says Hoffman. "If you need today 10 boxes to service a particular request and your traffic doubles, we can just add 10 more, and it's not only handling twice the capacity but it's now twice as redundant as it was before."

It's also a less costly way to scale. "It's literally plugging a commodity PC with a minimal amount of purchased software and some open-source software into the network," says Hjelm. "It's less than $5,000 and continuing to come down."

Orbitz runs two types of services — those that talk to other services and those that talk to third-party mainframe hosts. On the back end, Orbitz builds Java interfaces to the third-party mainframes, such as those of WorldSpan Technologies Inc. or Pegasus, transforming their content into Jini services that register with the lookup services. The Java virtual machine and the Jini service interfaces run on Orbitz servers. "All the carriers had to do was give us their custom protocols to communicate with their mainframes," says Chism. "We did the rest."

The company gains access to its non-Java low-fare search engine from ITA Software Inc. in Cambridge, Mass., in a similar fashion. Orbitz also books some hotel rooms and entertainment tickets through its own systems via allotments from the vendors.

To reduce GDS fees, Orbitz developed technology called Supplier Link to provide direct links to the internal reservations systems of participating airlines, including American Airlines, Alaska Airlines, America West Airlines, Continental Airlines, Northwest Airlines and US Airways. Customers booking tickets with those airlines are directed to the Orbitz Next-Generation Booking Engine, which uses Jini lookup services to find the optimal way to book the ticket.

Only if Supplier Link connections are down or the itinerary fails to meet specific criteria are they connected to GDS vendor WorldSpan, which gets a bigger cut of the transaction.

"Rule No. 1 is book the ticket. Rule No. 2 is book it on Supplier Link if you can," says Chism.

One benefit of the multilayered approach is that Orbitz can add more air services for a specific carrier, such as Alaska Airlines, without having to deploy a new instance of the overall application. The staff simply gets a new PC, installs Linux and Java on it and configures it as an instance of the Alaska Airlines service. The service is immediately registered with the Jini lookup service without Orbitz having to take down any part of the application.

"We literally turn on Alaska Air without the application layer even knowing," says Hjelm. "That's an enormous amount of flexibility. It really allows you to focus skills and the effort of your staff." Hjelm says less than 10% of the nearly 100 developers at Orbitz are responsible for working on the back-end Jini service interfaces and systems. The rest concentrate on the customer-facing Web applications.

"What you're trying to do is manage down the complexity of building applications and have those scale over time," says Hjelm. "One of the great questions is: Why do many development shops start to slow down as they get larger code bases and more and more people? The reason generally is that they don't follow good architectural practices."

Orbitz continues to create new customer offerings that essentially assemble or repackage existing products. For instance, it can aggregate air and hotel offerings into a dynamic service with no recoding required, according to Chism.

"All the discoveries are dynamic at runtime," he says. "You do your logic and you make the calls out when you need to, and it dynamically finds the services that it needs in the production environment."

Hidden Value

Jennifer Kotzen, who heads Jini marketing efforts at Sun, says the technology's main appeal for corporations has been its dynamic networking capability, wherein a distributed system can better accommodate change in the runtime environment.

"There's been a shift in our understanding of the value proposition with Jini," she says. "It's not just how to let devices talk to each other."

Kotzen says there have been a "good number" of deployments, particularly in the financial services industry. But many users decline to speak publicly about Jini, and Sun has no accurate way to track the number of installations, she says.

Jini also continues to be plagued by a number of lingering misconceptions, according to Kotzen. One is that all the code, services and clients need to be written in Java and that there needs to be a Java virtual machine everywhere. Kotzen says that's not true; Java-based interfaces to a legacy system and the Java virtual machine can run on a "surrogate" machine.

HOW JINI WORKS
Find out more about Jini technology online:
QuickLink 49194
www.computerworld.com

Another hurdle is that the independent software vendor community around Jini remains limited. Only eight vendors make commercial products targeted at Jini developers, according to Kotzen.

But Orbitz no longer frets over the lack of vendor backing. "I was worried when we started, but the community has been more than helpful," says Chism. "The guys who wrote the product are very accessible. You have questions, you have problems, they'll get back to you."

So why hasn't Jini caught on? Hjelm thinks it might have been too complex for the average software shop that's used to more simple tools. Chism says Sun mismarketed Jini to the hardware market when it should have been going after the software market. But where Orbitz is concerned, he has no regrets.

"I was very confident in the decision then, and I'm very confident in the decision now," says Chism. "I wouldn't change it. I don't think we'd be where we are today if it weren't for Jini." 48983

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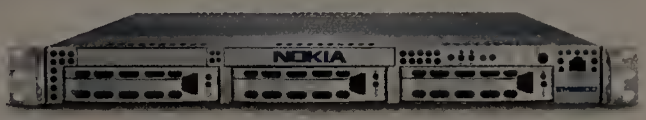

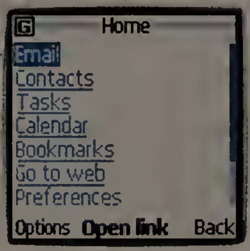

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AGENTS OF CHANGE

Autonomous agents are still in the labs but could eventually play a critical role in areas ranging from setting market prices to creating more resilient networks. **BY PATRICK THIBODEAU**

OVER THE PAST YEAR, NASA has been uploading software into the Earth Observing-1 satellite, turning it into a testbed for autonomous agents. The agents — software programs that are able to learn and can function independently — are used to manage experiments and operate the spacecraft.

The effort is part of a technology initiative that researchers say will reshape IT over the course of many years. Autonomous agents have the potential to become an extraordinarily powerful technology, with the capacity to learn, experiment and act independent of human control. Agents could ultimately improve productivity, increase software reliability and change the operation of markets, particularly supply chains.

Managing Complexity

NASA uses autonomous agents to handle tasks that appear simple but are actually quite complex. For example, one mission goal handled by autonomous agents is simply to not waste fuel. But accomplishing that means balancing multiple demands, such as staying on course and keeping experiments running, as well as dealing with the unexpected.

"What happens if you run out of power and you're on the dark side of the planet and the communications systems is having a problem? It's all those combinations that make life exciting," says Steve Chien, principal scientist for automated planning and scheduling at the NASA Jet Propulsion Laboratory in Pasadena, Calif.

Like many programs, agent software and related algorithms are often coded in Java. What makes them different is that the designs also incorporate disciplines such as game theory. Agent designers tend to draw from a variety of areas, such as economics and psychology, in an effort to create programs capable of handling complex interactions.

Programmers are adept at building systems that respond to a certain set of "if-then" circumstances. But NASA's agents are model-based, designed to achieve the goals and intentions of the designers, not merely to respond to a given event. That means they can react to unimagined events and still ensure that the spacecraft does not waste fuel while keeping to its mission.

At NASA, software agents are performing work previously handled by ground controllers. But the cost-saving potential of agents is something "we don't emphasize, because nobody likes their budget reduced," says Chien. Instead, the focus is on the additional scientific research created by the use of agent-based software.

Making markets, supply chains, telecommunications and other systems more efficient through the use of agents is a subject of intense interest. Some 800 researchers recently gathered at Columbia University for the Third International Joint Conference on Autonomous Agents & Multi-Agent Systems, the leading conference on the technology. In addition to people from universities and government agencies, the event attracted researchers from defense, telecommunications and software development.

IMAGE COURTESY OF NASA

NASA's Earth Observing-1 satellite, which began operation in 2000, was recently turned into an autonomous agent testbed.

The conference stressed both abstract concepts and practical application of the technology. Most presentations detailed the latest research in a wide variety of areas, such as machine learning, which involves creating agents that have the ability to discover interactions and respond to them. Others addressed the behavior of multiple agents: how they work together, exchange information, set priorities and negotiate with one another.

Putting It to the Test

Negotiation was one of the key agent capabilities tested at the conference's Trading Agent Competition. In one contest, computers ran simulations of agents assembling PCs. The agents were operating factories, managing inventories, negotiating with suppliers and buyers, and making decisions based on a range of variables, such as the risk of taking on a big order even if all the parts weren't available. If an agent made an error in judgment, the company could face financial penalties and order cancellations.

Researchers say there is no optimal agent design, and the contest serves as a performance testbed. "If you have a better strategy than your competitor, you're in a more advantageous position in the marketplace," says Nick Jennings, who heads the autonomous agent program at the University of Southampton in England.

Decision-making software is already used in financial markets for functions such as automated trading, but those processes are simpler than the business-to-business transactions that agent researchers are testing. Instead of dealing with fixed prices, researchers are looking at scenarios where agents must constantly negotiate the best prices with a variety of suppliers. In so doing, they must take into account changing market conditions while also considering inventory, production, factory capacity and other issues.

"Our scenario presumes automation beyond the degree that currently exists, but I think things are going in that direction," says Michael Wellman, professor of commercial science and director of the artificial intelligence laboratory at the University of Michigan.

IBM is building agent technology to support its autonomic computing systems, which have the intelligence to reconfigure themselves in response to changing conditions, according to Jeffrey Kephart, manager of agents and emergent phenomena in the computer sciences department at IBM's T.J. Watson Research Center.

Agent researchers "are working toward a world some years hence where these automated decisions are going to be used. Those people in industry who are really thinking about this know that they are going to need technology of this nature, in supply chains," Kephart says. The research work so far bodes well for that future, he adds.

Agents may change the nature of distributed computing environments. Instead of centralized control systems, agents could independently operate parts of a network but also have the ability to take over other functions if problems arise. Interest in building survivable systems, where agents regenerate lost capabilities in communications networks, is of interest to the U.S. defense researchers and scientists at Cambridge, Mass.-based BBN Technologies, part of Verizon Communications Inc.

Agent researchers say the technology won't arrive in big-bang fashion. But slowly, over time, agent functions will begin turning up in systems. This technology is "going to be revolutionary," says Richard Lazarus, manager of the enterprise architectures group at BBN, "but it will occur incrementally."

48862

AT A GLANCE

Autonomous Agents

Autonomous agents are p[illegible]pable of independent action. [illegible] signed to respond to "if-then" s[illegible] but more complex, model b[illegible] try to achieve goals such as [illegible] specific performance levels [illegible]

Some are capable of [illegible]**ing**: They can experiment, t[illegible] teractions and take correc[illegible] address situations never [illegible] their designers.

As for **ap[illegible]s**, [illegible] is on designing [illegible]ts [illegible] ating with other [illegible]ts [illegible] and supply chain applications. [illegible] administration is a[illegible]

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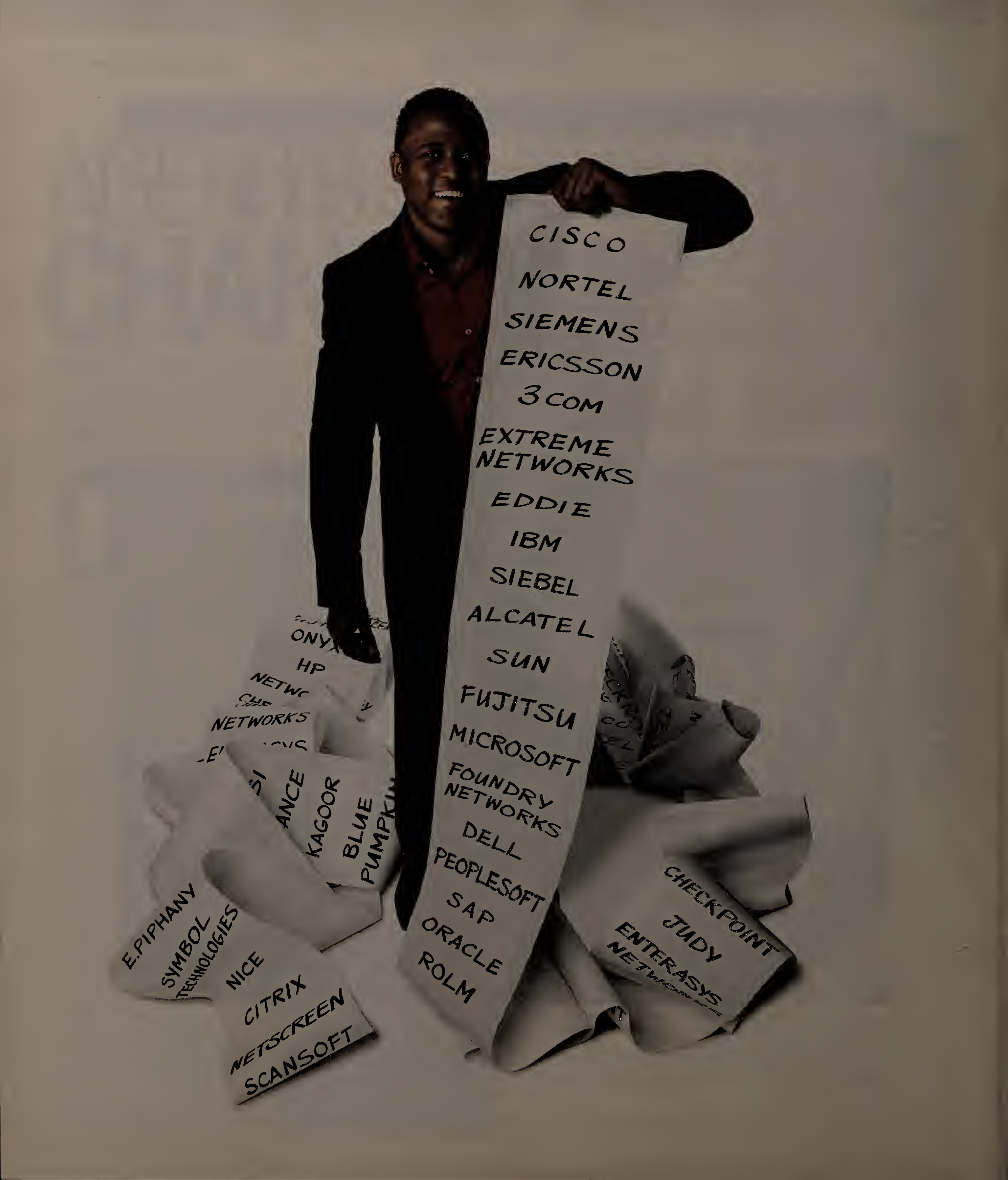
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SURVIVAL OF THE Fittest

Survival analysis has been used for years to predict cell death. Now it can forecast customer attrition. **BY GARY H. ANTHES**

SURVIVAL ANALYSIS could help you predict that one of your best customers is about to jump ship for a competitor. Or it could help you decide whether that costly promotion is really going to be worth it. Or it could help you tailor that next catalog mailing and double your return.

The aptly named analytic technique, also called survival data mining, has been used by doctors for decades to predict the life expectancy of heart-transplant patients and by biologists to assess the probability that a cell invaded by a virus will die within 24 hours. Engineers have long used it to estimate the mean time to failure of a disk drive or a robotic welder. More recently, sociologists and psychologist have started using it to predict when certain types of people will divorce or seek help for depression.

But until recently, attempts to apply survival analysis to business problems have been mostly university projects, says Edward Malthouse, a marketing communications professor at Northwestern University. "Now it's really taking off in the database marketing world — for credit cards, hotels, airlines, catalogs and so on," he says.

Survival analysis refers to a family of "time to event" prediction techniques mathematically geared to problems with the following characteristics:

- **They deal with discrete events that will occur to some but not all members of a given population.** Certain patients will die, some disk drives will fail, a certain number of prescriptions for Valium will be written, and some of your best customers will desert you.
- **They involve time-dependent outcomes.** Is that key customer going to cut up his charge card tomorrow (better call him today), next quarter (send him mail) or not in the next five years (leave him be)?
- **The outcomes of interest, or "dependent variables," aren't continuous – like income, height or IQ – but are dichotomous.** Either the patient will die within six months or he won't. Your customer will leave this year or he won't.
- **Outcomes often can be anticipated by trigger events, such as customer complaints.**

Randy Collica, a senior analyst at Hewlett-Packard Co., says use of survival mining to understand and predict customer behavior has sprung up in the past couple of years. He says it's really just an extension of older practices in which a company would take its most recent customer data, or data from a time slice such as a quarter or year, and try to predict attrition based on that.

But survival mining puts time itself into the analysis as a variable. "It is a superset technique," Collica says. "Including time as an element is adding that much more information."

Choosing a Technique

Software for survival analysis most often uses some kind of regression technique, notably logistic regression or a kind of regression called Cox proportional hazards modeling. In addition, some vendors sell products that do time-to-event predicting using neural networks or genetic algorithms.

For example, SAS Institute Inc. has survival prediction capabilities in several of its products. According to Anne Lilley, manager of analytic strategy at SAS, deciding which product or technique is appropriate depends on how the problem is formulated, the type of output desired and users' ability to code and prepare data.

New York-based investment firm The Dreyfus Corp. used SAS's logistic regression routines to beat down customer fund redemption rates from more than 20% a year to less than 7%. "Assets were going out of the complex, and we didn't know why," says Prasanna Dhore, an executive vice president.

First Dreyfus used survival analysis to help it understand the factors that were leading customers to cash out. The company organized terabytes of customer history along three dimensions: customer life stage (e.g., young married, peak earnings age, retired), past investor behavior and basic demographics, such as education.

"Then we asked if we could predict behavior," Dhore says. "What's the probability that Customer A is going to take the money out in the next two years, for example? Then, what does it take to extend his life with us?"

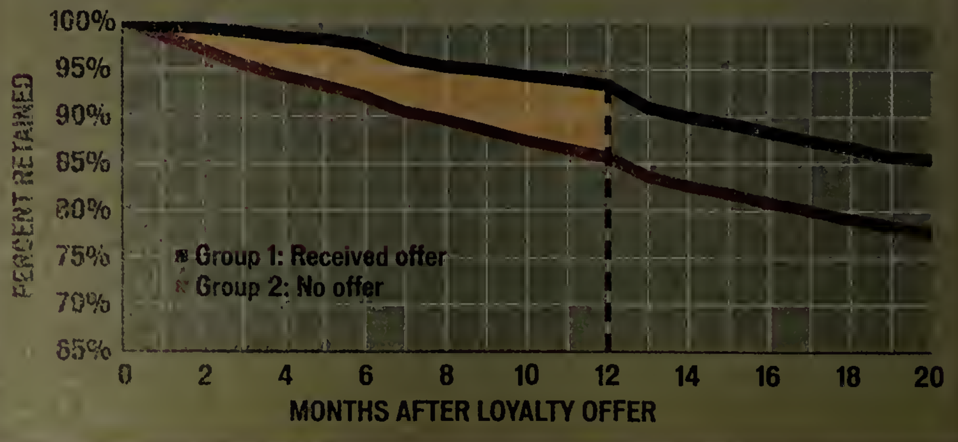
The answers to those questions varied by customer type. For example, the analysis showed that customers identified as "street savants" would redeem within three months of a fund's performance slump. "So if you can call him up and give him other opportunities, he can be kept in the Dreyfus family and we can extend his life another six months, a year or two years," Dhore says.

Catholic Relief Services uses software from Genalytics Inc. in Newburyport, Mass., to "find needles in a haystack," says Kevin Whorton, director of direct-response fundraising. Those are donors who will not simply make one-time gifts in response to an emergency such as a hurricane, but who will keep on giving thereafter. The software uses genetic algorithms that learn over time in order to produce "self-adjusting models," Whorton says.

For example, one model showed that Hispanic donors have a far higher attrition rate than non-Hispanic donors, a special concern, Whorton says, because by 2025, Hispanics will account for half of all Catholics in the U.S. "So now we can do more with these people at the four-to-six-month point in the relationship," he says. 48775

LOYALTY PROGRAM: IS IT WORTH IT?

The graph below compares customer survival (retention) after acceptance of a loyalty incentive (top curve) with survival of customers not offered the incentive. The area between the two curves for the first year can be computed to find the value of the offer.



DATA MINERS INC., BOSTON

THE PERILS OF Prediction

Because survival analysis is by definition time-dependent, The Dreyfus Corp. has had to ensure that data from many different sources across long time horizons matches up correctly. "Timing is of utmost importance," says executive vice president Prasanna Dhore.

"Take a holistic view of your customer," advises Genalytics CEO Doug Newell. "Everything you know about them must be brought to bear."

Improperly accounting for "time-dependent covariance" is a frequent mistake, says Will Potts, a statistical consultant at Data Miners Inc. in Boston. Customer attributes change over time, and a certain event may be likely now not because of current values of predictors but because of earlier values, he says.

Edward Malthouse, a marketing communications professor at Northwestern University, warns that as with most predictive techniques, survival analysis can base its predictions only on prior experience. "You are really looking in a rearview mirror with survival analysis. It's dependent on what you did to the customer in the past. So if you have a bold new idea – say, a new loyalty program – you are not going to see the effects of that."

– Gary H. Anthes

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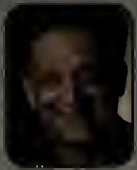

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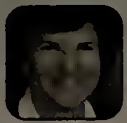

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Avoiding Armageddon

Predicting asteroid impacts will require supercomputers and petabytes of data.

By Patrick Thibodeau

An asteroid hitting Earth, as depicted by an artist, is the scenario data-intensive programs like LSST and Pan-STARRS are aimed at preventing.

THE COMPUTERS at the Minor Planet Center recently sorted through some 10,000 observations of astronomic phenomena and deemed a handful as deserving follow-up because they were either newly discovered or on a path in Earth's general vicinity.

The preliminary trajectories plotted by the MPC were based on too few observations to be accurate, but unbeknownst to center officials, the computer had found one object on a collision path with Earth. The discovery was posted on the Web late in the day on Jan. 13, 2004.

Alert amateur astronomers in Europe first noticed the problematic path of the near-Earth object (NEO), and a Yahoo message board used by astronomers began to fill with activity about the bogy.

Mapping the Cosmos

In some ways, scientists were lucky to have found this potential threat, because finding NEOs today is literally a hit-or-miss activity.

The first warning of an asteroid or comet impact may come from calculations performed by some old workstations clustered together at the MPC at the Smithsonian Astrophysical Observatory at Harvard University.

These systems aren't large enough to map the sky and provide scientists with a comprehensive view of everything that could do serious damage. But that's changing. Some big projects are under way to attempt to find as many threatening objects as possible. These sky-mapping efforts will create extraordinarily large data sets and require new searching and processing approaches.

One ambitious project is the Large Synoptic Survey Telescope (LSST), a public/private partnership based in Tucson, Ariz., intended to provide 3-D maps of the universe, covering a very wide area.

When it's in operation in 2011 at a site still to be determined, the telescope being built for the LSST project will collect data at a rate of about 6GB (equivalent to one DVD) per 10 seconds, generating many petabytes of data over time. One petabyte equals roughly 100 times the printed contents of the Library of Congress.

FUTURE WATCH

The LSST project "pushes forward database technology dramatically," says Philip Pinto, a physics professor at Steward Observatory at the University of Arizona and a member of the LSST project's board of directors. "The LSST database will probably be the largest known nonproprietary database in the world."

Because operation of the telescope lies some seven to eight years out, the scientists working on it are hopeful that processing capabilities and storage densities will increase enough to handle this data, but they can still imagine a supercomputer system of 1,000 or so systems networked together.

Work on the software has already started, however. "It's not entirely clear how you do it," says Jeff Kantor, a computer scientist in charge of data management on the project. He's developing algorithms for handling the data, such as determining from multiple observations whether a particular dot in the sky is the same object moving from frame to frame.

A second effort, called Pan-STARRS (Panoramic Survey Telescope and Rapid Response System), is being developed by the University of Hawaii's Institute for Astronomy.

The Large Synoptic Survey Telescope Project

Instead of a large telescope, the Pan-STARRS project will use four smaller ones that combine image data and generate data on a scale similar to that of the LSST. These multiple systems, further delineated by 64 detectors in each of the four cameras, will be well suited to parallel processing.

But instead of the CPU parallelization common in high-performance technical computing, researchers in Hawaii are working on data parallelization in which every processor works on different data but executes the same instruction at the same time. "A lot of techniques have been explored in that particular realm," says Eugene Magnier, image-processing pipeline technical lead. Pan-STARRS is expected to be operational by 2008.

Scientists hope that LSST and Pan-STARRS will help them identify most of the NEOs that may threaten Earth and locate those on a dangerous path long before they strike. They hope that information will give them time to develop ways to deflect the NEO.

These system developments will happen, of course, only if the Earth isn't first destroyed by a comet or asteroid.

Predictive Processes

Among those following the activity on the Yahoo message board back in January was Alan Harris, a senior research scientist at the Space Science Institute in Boulder, Colo. Harris ran some calculations and found that the object was "heading straight for us at around 18km/sec." and would hit in 26 hours.

The NEO was estimated to be about 30 meters in diameter. Depending on its composition, it could have disintegrated in the atmosphere or hit the Earth. (The mile-wide, 570-foot Barringer Meteorite Crater in Arizona was created by a 45-meter iron object.)

Harris was nonetheless skeptical about the object's preliminary path. The MPC trajectory was based on only a few observations — enough to help astronomers find it, but not accurate enough to determine its actual course.

At 8:30 p.m., Bruce Marsden, director of the MPC, got a call from NASA's Jet Propulsion Laboratory. The NASA official "sort of was wondering" about the path of the object, Marsden recalls.

Marsden ordered further observations, and the bogy was determined not to be on a threatening path after all.

In the aftermath of this incident, the MPC changed the computer program that provides the preliminary path of an NEO. Next time the computer forecasts an "impacting solution," as astronomers call it, the program will alert staffers before the data is posted on the Web. Q 48928

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Secure E-mail Stops At Corporate Borders

Providing end-to-end e-mail security with business partners is difficult at best. By Roger Foix

LIKE ANY OTHER company, my current client does not work in a vacuum. The company — a small insurance firm — has many partners, clients, suppliers and regulators with whom it exchanges information on a regular basis. Much of that information is highly confidential.

So far, I've tackled internal e-mail security. Now I'm working on a tougher issue: How do you know that the information remains confidential when it reaches its destination? E-mail is not only easy to forward to the wrong person; it's also vulnerable to any security breaches in your partners' systems. If you send confidential business e-mail to a client and the client suffers a security breach, that company could expose your confidential data as well as its own. So you are very dependent on your trading partners' IT security to safeguard your information.

I looked into the possibility of using digital rights management (DRM) software, which can offer control over your documents once they're out of your system by restricting to whom a document can be sent, automatically deleting it and so on.

However, my client's security team doesn't believe DRM will work. So the obvious next step is to find some way to get assurance about the security of its trading partners' systems. If we know a partner's security is relatively good, we have some assurance that data will be protected appropriately. There are several ways to gain that assurance, but they all have drawbacks.

One is to rely on the International Standards Organization's ISO 17799 certification. This security management standard isn't bulletproof — just because you're compliant doesn't mean you won't get hacked — but if a partner was compliant with the standard, we would at least have a warm, fuzzy feeling that it was doing the right thing. The only drawback is that, as far as we can tell, none of our partners is compliant with ISO 17799.

SECURITY MANAGER'S JOURNAL

Not one.

It's not that we're dealing with a particularly unsecure set of companies; it's more the case that ISO 17799 compliance takes time, effort and money. And once companies earn that compliance certification, they have little to show for their effort, so few companies bother.

A second option is to send in the auditors. For major trading partners, my client often sends a team of auditors to crawl all over their systems and make sure they're doing things right. The auditors normally cover a whole range of things in addition to security, and it gives my client more assurance than it can get any other way. The drawback is that auditing is a slow and expensive process. And as with any audit, what you get is only a snapshot: Two years from now, its partners' systems and security will have changed dramatically, so my client will have to reaudit regularly.

> **As far as we can tell, none of our partners is compliant with ISO 17799. Not one.**

A third option is to rely on security and confidentiality clauses in contracts. My client includes such clauses in every contract it sends out, but I don't have much faith in such things. First of all, contractual clauses about security are a reactive measure: They're only effective after a problem occurs. This company really needs a measure that stops problems from happening in the first place.

Second, while contractual clauses enable my client to sue a trading partner for damages after a security breach, IT security litigation is expensive and unreliable, since it's rarely easy to prove how a particular piece of confidential data leaked out.

As I walked through these options with members of my client's staff, I could see their faces dropping steadily. Unfortunately, I didn't have a better solution to offer them.

Paper-based Process

We're now implementing a paper-based process. Basically, we ask my client's partners a few pertinent questions, review their security policies and see if we get a nice feeling about them. We have no way of checking that the answers are accurate — when a company has over 600 trading partners and a small security budget, there's no cost-effective way to verify anything.

Still, it does help us identify the companies that need closer attention and target them for audits. When you get an e-mail back from a supplier saying, "We'll send you our security policy in a couple of weeks, since the guy who's got it is on holiday at the moment," you get a very strong feeling indeed. After all, if only one person in the company has a copy of the policy, it's unlikely that anyone else is following it.

Another supplier boasted of its extensive wireless networking and then, in answer to the question "Make and model of main firewalls," put down the name of an antivirus checker. That worried us.

What we ended up with is a paper-based system that can't be relied upon to be accurate, can only scratch the surface of our partners' security and goes out of date very quickly. But as far as I can see, that's the best option available for checking security.

What I'd like to see is the creation of an independent agency that measures and reports on companies' information security, in much the same way that analysts give financial risk ratings to companies. If Moody's Investor Service gives a AAA rating to a company, you can be confident that the company isn't going to go into Chapter 11 bankruptcy before it gets around to paying you.

All we need is an agency to step up to the plate and start providing security risk ratings for companies. That would act as a great facilitator to e-commerce, and it would provide customers with a valuable way of assessing how well suppliers are looking after their confidential data.

In the interim, if you have any ideas, I'd like to hear them. Send me an e-mail or post your message in the Security Manager's Journal forum. ◗

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Roger Foix," whose name and employer have been disguised for obvious reasons. Contact him at roger.foix@hushmail.com, or join the discussion in our forum: **QuickLink a1590**

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SECURITY LOG

Web Resources

- Looking for more information on ISO 17799? The ISO 17799 Services & Software Directory Web site has general information on the ISO security standard: www.iso17799software.com/presentation/index.htm
- The ISO 17799 World site reviews compliance and policy issues: www.iso-17799-security-world.co.uk
- This site has FAQs about ISO 17799 compiled by the National Institute of Standards and Technology: www.iso-17799.com
- The ISO 17799 Community Portal page includes both papers and a discussion forum: www.17799.com

– Roger Foix

VirusScan Gets IPS Features

McAfee Inc. has announced a new version of VirusScan Enterprise that includes some intrusion-prevention system (IPS) functions in addition to antivirus and firewall features.

Version 8.0i i offers a small set of IPS capabilities designed to protect users while creating a minimum of "noise," such as blocking valid traffic, but it isn't a full-featured IPS, the company said. It also has features to manage and limit the damage caused by malicious code outbreaks, McAfee said.

The product is available for free to customers with valid support agreements.

Database Security Tool Upgraded

IPLocks Inc. has announced a new release of its database security management software suite. IPLocks 4.1 adds session policy and usage pattern monitoring, penetration testing features and an auditing function that can monitor record changes without the need to turn on the audit trail feature in Oracle databases, according to the San Jose company. It's available now.

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BRIEFS

Xcel Deploys Peace Software System

■ **Xcel Energy Inc.**, a power company in Minneapolis, recently deployed a customer information system (CIS) to support 1.5 million electricity and 1.2 million gas customers in six states. The system, from Peace Software Inc. in Miami, replaces two systems that the company was left with after a 2000 merger between New Century Energies Inc. and Northern States Power Co. IBM Global Services was the project manager and systems integrator for the implementation. As a result of the Peace CIS installation, Xcel will have all of its customers in 11 states on one system.

Fujitsu Announces Four-Way Server

■ **Fujitsu Computer Systems Corp.** in Sunnyvale, Calif., has announced a compact four-way SCSI blade server, the Primergy BX600. Each blade accommodates up to four Intel Xeon MP processors and two hot-plug Ultra 320 SCSI hard drives as well as four Gigabit Ethernet LAN ports that can be upgraded to Fibre Channel interfaces. It fully supports Linux and Microsoft Windows Server 2003. Pricing starts at less than $18,000.

Microsoft Updates Virtual PC for Mac

■ **Microsoft Corp.** last week released to manufacturing its Virtual PC for Mac Version 7 and Office 2004 for Mac Professional Edition. Virtual PC enables Windows-based applications to run on hardware from Apple Computer Inc. Version 7 adds support for Apple's latest 64-bit G5 processor. Virtual PC 7 with Windows XP Professional will be available in October for $249. Stand-alone and upgrade editions as well as versions for Windows 2000 and Home editions are expected next year. Office 2004 for Mac Pro, which sells for $499, will ship next month with a copy of Virtual PC 7 and Windows XP Pro.

PAUL A. STRASSMANN

Why IT Will Continue to Matter

THE COST SQUEEZE IS ON. Automobile companies are racing to get slimmer. According to *The New York Times,* automakers are now ranked according to how few hours they spend building a car. For instance, General Motors claims to be the leader, with only 35.2 hours per vehicle. Chrysler puts in 37.42 hours. Ford takes 38.6 hours. They're all keeping an eye on the efficiencies of Toyota, which assembles cars in Fremont, Calif., in only 21.92 hours while gaining market share.

PAUL A. STRASSMANN (paul@strassmann.com) has served as a CIO long enough to recognize that the full potential of IT is ahead of, not behind, us.

Every company in the world is now engaged in a race to reduce costs. The hours-per-car statistics are revealing because they reflect the extent to which outsourcing takes place. GM looks good because it outsources more than Ford: 76.2% of revenue vs. 70.2%. You can always show an improvement in productivity by getting others to do your work. For instance, the current claim by GM that it reduced IT costs as a percentage of revenue doesn't necessarily attest to the company's improved efficiency. It only proves that GM has shrunk its value-added and therefore doesn't need to spend more on IT.

Calculating the cost of GM's 35.2 hours per vehicle raises a more interesting question. GM's average labor cost, which includes managerial and executive compensation, is $33.30 per hour. That means GM puts $1,172 of labor into a car that it sells, on average, for $30,500. Even after paying for depreciation and taxes and making an allowance for relatively slim profits (another $6,087), this leaves $23,241 of purchases to be managed for greater efficiency.

Taking a purely intracompany view of the scope of IT would, however, be a mistake. The emphasis in global competition is now shifting from the costs of a company's products to the consumer's life-cycle total costs of ownership. In the case of a $30,500 automobile, that requires adding the costs of distribution and the customer's five-year expenses for taxes, insurance, financing, registration fees, maintenance, repairs, oil and fuel. That raises the consumer's cash costs of an average GM car to at least $73,600.

As I calculate the consumer's life-cycle costs of $73,600, I find that IT can't account for more than 6% of the total expenses. The costs of information management would be about 30% if added up for suppliers, manufacturing, management, dealers and the consumer's ownership. As manufacturers shift costs to suppliers, as management shifts costs to manufacturing and as customers shop around for the best deal, every reshuffling of how money is spent ultimately affects all others. The cost of parts will influence maintenance and insurance costs. The cost of the car will influence taxes and depreciation.

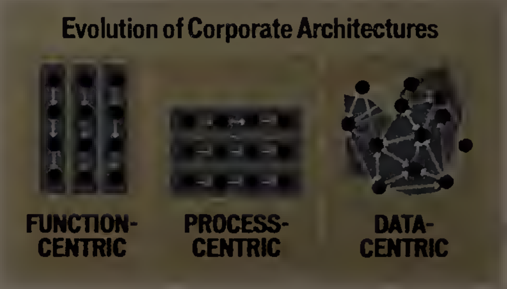
In the global marketplace, all costs become interdependencies, often involving hundreds of businesses to deliver a single product. Therefore, the management of IT over the next few decades will be shaped by the need to extend the boundaries of corporate information systems from the traditional corporate-centric orientation to delivering consumer-centric services. For instance, in the case of an automobile, this will require setting up lifetime configuration management databases for preventive maintenance, repairs, parts, upgrades, warranties, financing, registration, insurance and fuel management.

The concept of global life-cycle support of products and services, as seen from the consumer standpoint, will become the dominant theme of IT management.This will require an architecture that assures data interoperability over the entire value chain. For instance, the reliability of parts must be traceable over a complex chain of ever-changing suppliers. Preventive maintenance records will have to travel as a vehicle passes from owner to owner. Accident records will have to be integrated with insurance and repair records.

Identical reasoning also applies to pharmaceuticals, medical services, food, banking, refrigeration and airplanes. The CIOs who succeed will extend the positioning of IT from the corporate back office (an overhead cost) to a customer life-cycle support view (a company's core competency).

The current introspective, function-centric and process-centric systems architectures will have to be replaced by data-centric designs that assure interoperability of data that's independent of technology, location or organization.

Evolution of Corporate Architectures



Implementing such a transition will be the challenge for all IT executives in the future. Meanwhile, the IT industry, the CIOs and all of the naysayer gurus should be put on notice that the best of IT is yet to come. 49169

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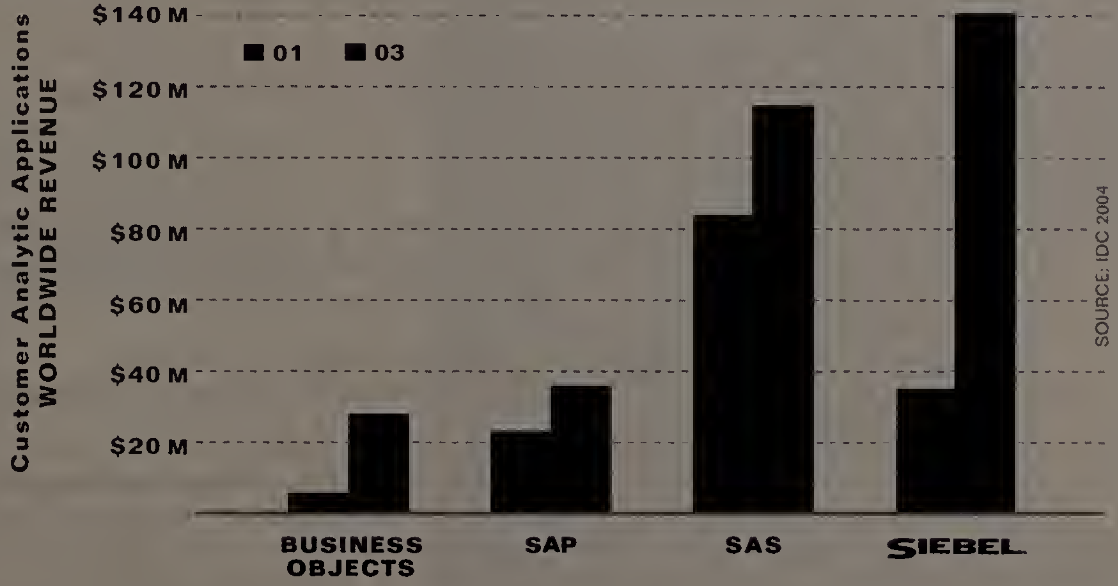

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Grid Computing: Assessing the Reality and the Potential

Boston · September 21, 2004

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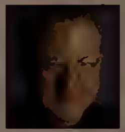
7:45am to 8:15am	Registration and Networking Breakfast
8:15am to 8:45am	**From Cutting Edge to Corporate Stage: Grid Computing and the Enterprise** Julia King, Executive Editor, Events, Computerworld
8:45am to 9:15am	**Industry Analyst Perspective** John Humphreys, Research Manager, Enterprise Computing, IDC
9:15am to 9:45am	**IT Executive View: One User's Experience Implementing Grid** Chris Bennett, Technical Team Leader, Workflow Technology Group, Acxiom
9:45am to 10:15am	Refreshment and Networking Break
10:15am to 10:45am	**Update from the Enterprise Grid Alliance (EGA)**
10:45am to 11:15am	**The View of Grid Computing from Iron Mountain** Bill Olsen, VP of Engineering, Iron Mountain Digital Archives
11:15am to Noon	**Key Considerations in Grid Computing Projects: An IT Executive Roundtable** Panel Moderator: Patrick Thibodeau, Senior Editor, Computerworld Panelists: Ben Flock, VP of Virtualization and Application Frameworks, CIGNA; Mark Forman, Executive Vice President, Worldwide Services, Cassatt; Bill Olsen, VP of Engineering, Iron Mountain Digital Archives
Noon	Program Concludes

Selected speakers include:

Julia King
Executive Editor, Events, Computerworld

Ben Flock
VP of Virtualization and Application Frameworks, CIGNA

John Humphreys
Research Manager, Enterprise Computing, IDC



Patrick Thibodeau
Senior Editor, Computerworld

This program will also take place at the Philadelphia Marriott in Philadelphia, Pennsylvania on September 15, 2004

For more information on these locations, call 888-299-0155

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Think Tank

Instant messaging isn't just for idle chatter. Chip Ganassi Racing's Mark Paxton (left) is using IM on the racetrack to provide a competitive edge. Plus, worldwide hot spots for IT spending; and the most overhyped technologies. **Page 39**

Q&A

Stop Wasting Time

Consultant Michael C. Mankins explains how to save time and make faster, better team decisions. **Page 40**

OPINION

Accountability vs. Blame

When managers say "accountability," they often mean "blame," says Paul Glen. Knowing the difference between the two can improve your performance and that of your team. **Page 44**

Staying Power

Smart companies are enticing their older, wiser IT workers to remain on the job a little bit longer. **By Julia King**

At age 74, Norma Veta still works three days a week at The Aerospace Corp.

LARA JO REGAN

NORMA VETA, 74, AN IT RETIREE from The Aerospace Corp. in El Segundo, Calif., spends two days a week helping her son's family and managing several rental properties. The other three days, she returns to Aerospace to work on special IT projects. After 40 years with the R&D and engineering services company, she knows the payroll and benefits systems almost as well as the faces of her three grandchildren.

Nine months after retiring from a 28-year career as an IT infrastructure specialist at Hartford Technology Services Co. in Hartford, Conn., Ken Klein, 62, is taking sailing lessons, spending months at a time traveling with his wife, exploring volunteer opportunities with Habitat for Humanity, collecting a pension and still working 20 hours a week on IT projects at the subsidiary of The Hartford Financial Services Group.

Welcome to the 21st century's version of retirement, an increasingly longer stretch of life that for many IT professionals is just as likely to include new technology training and mentoring assignments as tango lessons or road trips.

"People used to think of retirement as a five- or 10-year period, but now people see they'll have as much as 30 years and are looking at how to spend those years incorporating some element of what we'd call work," says Tamara Erikson, a consultant at The Concours Group in Kingwood, Texas, and co-author of a forthcoming book on the effect of demographic shifts on the workplace.

According to recent research by the American Association of Retired Persons in Washington, 80% of baby boomers plan to work at least part time during their retirement. Most have no desire to work full time, however. They want flexible working arrangements, project-based assignments and part-time status that enables them to travel, volunteer and pursue their leisure interests while remaining engaged in challenging work with colleagues.

Human resources professionals say companies offering such arrangements benefit by retain-

The Graying of The Workforce

PERCENT GROWTH IN U.S. WORKFORCE BY AGE BETWEEN 2000-2010

16 to 24 years old	15%
25 to 34 years old	8%
35 to 44 years old	10%
45 to 54 years old	21%
55 to 64 years old	52%
65-plus	30%

SOURCE: U.S. BUREAU OF LABOR STATISTICS

ing skilled and knowledgeable workers longer. This is especially critical now, as the population between the ages of 35 and 44 — the prime executive development years — is actually declining, according to the U.S. Bureau of Labor Statistics. Moreover, the fastest-growing segment of the workforce is the over-55 set.

For IT, there's a double whammy. The *Los Angeles Times* recently reported that 23% fewer students are enrolling in computer science programs that would prepare them to take over key IT positions. Meanwhile, the U.S. Department of Labor is forecasting a 46% increase in the number of jobs for computer software engineers between 2002 and 2012.

Both trends coincide with the demographic fact that over the next 15 years, one out of four U.S. workers will hit his 60s and likely begin contemplating retirement.

"Retirement is going to have a big impact in terms of how much of the workforce is available over the years ahead," says Bob Morison, research director at The Concours Group.

What's more, "what walks out the door can't be replaced by a 23-year-old coming in the door," he adds. "If more people decide to work longer, it would have a very significant [and positive] impact on the workforce shortage."

Keeping Key Talent

That's happening at The Mitre Corp., which operates three federal IT development centers. Mitre credits its retirement and postretirement programs with helping to keep its employee turnover rate at a rock-bottom level of 4%. The average age of the company's 5,300 employees is 46.

Mitre has no mandatory retirement age, but workers over 55 are eligible for phased retirement, which allows them to continue working part time while drawing on a portion of their retirement benefits. "It's an option for people who want to stick their big toe in the retirement waters without taking a big leap," says Bill Allbright, director, quality of worklife and benefits.

Under a Mitre program called Reserves at the Ready, workers who have retired can return on a part-time, contractual basis, choosing their own hours and projects.

Chuck Sanders, 73, officially retired from his role as director of international integration programs in 2001, but he continues to work 1,000 hours per year in the same role. "Challenging work is why I'm here," says Sanders, who has worked at Mitre since 1958. "It's a combination of interesting work and flexible hours, which provides opportunities for other things."

What Older Workers Want

- Challenging work
- Flexible working arrangements
- Short-term, project-based work rather than assigned weekly hours
- Individual contributor assignments
- No management responsibility
- The chance to "try on" retirement with phased programs
- Minimal administrative hassles

Both programs also help keep critical knowledge in house and better orchestrate the transfer of that knowledge to younger workers.

Monsanto Co., a $3.4 billion St. Louis-based agricultural products and pharmaceuticals company, offers a similar program called the Resource Re-entry Center. Developed in 1991, it lets employees who leave the company in good standing return and work part time and on temporary assignments in IT and other key areas.

"These individuals know our culture and our language and can begin work with a minimum of on-boarding from us," says Deb Rogers, director of external relations, who is in charge of the program. About 300 former Monsanto employees are signed up for the program, with 175 on active assignments in 12 company locations.

The Aerospace Corp. offers a "try-on" retirement option, allowing older workers to take a leave of absence to help them decide whether they really want to retire. The company also has a Retiree Casual program that enables retirees to return to work part time. The program has about 500 participants, including one 90-year-old, with between 200 and 250 actively working, says Charlotte Lazar-Morrison, principal director of human resources.

Few and Far Between

Despite these pioneering examples, neither the indisputable demographic evidence of a shrinking workforce nor the obvious advantages of retaining mature workers has convinced more than a small minority of companies to actively work to retain their older, wiser talent.

"A large proportion of baby boomers envision themselves working well into their 70s, but on the whole, companies are not prepared [to accommodate them]," says Deborah Russell, manager of economic security and work at AARP.

"The top three things on companies' to-do lists should be to assess their own worker demographics and map out their retirement trends, then figure out what incentives they'll offer people to get them to stay and how they plan to transfer knowledge from these experienced workers to new workers," Russell says.

And they should do those things immediately, says Beverly Kaye, co-author of *Love 'Em or Lose 'Em; Getting Good People To Stay* (Bennet-Koehler, 1999). "When a company has a bad quarter or decides to reorganize — when the sands shift — anyone thinking about leaving will leave," Kaye says. "That's why this kind of intervention has to be on the radar screen now."

Specifically, Kaye recommends that companies shift their focus from traditional exit interviews to "stay interviews." Ask the workers you want to keep what they would require to stay a little longer, she recommends.

Companies also may need to refocus their benefits programs to entice more older workers to remain, says Valerie Paganelli, senior retirement consultant at Watson Wyatt Worldwide, a human resources and risk management consulting firm in Washington.

And employees should speak up. Don't wait to announce your plans to retire until a month or two before a chosen date. If you would like to have a more flexible working arrangement, make it known to your manager, Kaye suggests.

At The Hartford, where 25% of the company's 30,000-person workforce will be retired or eligible for retirement within the next six years, all workers are encouraged to present flexible working arrangements to management. The company's Web site advises workers about how to develop and submit proposals and advises managers about how to evaluate and approve workers' plans. Currently, 12% to 16% of the company's entire workforce is on some kind of flexible working arrangement.

"We've found that situations are very individual," says John Madigan, vice president of corporate staffing and education. "Someone might want to phase in retirement; another wants to telecommute or work part time."

The bottom line: "When we lose talent in the aging IT person, we lose wisdom," says Kaye. "We lose tacit knowledge, not just explicit knowledge, and we're letting that go all too easily. We need to be asking workers what it would take to have them stay and then offering them intriguing ways to do that." 48720

The Demographic Imperative

AFTER STUDYING THE ISSUE for a full year, researchers at The Concours Group came to the alarming but irrefutable conclusion that U.S. companies are on a collision course with their demographic destiny.

As more baby boomers approach retirement age, companies are facing a shortfall of at least 10 million workers by 2010. Still, few employers are working to recruit and/or retain older talent.

The reason? "It's the old boiling frog dilemma, where there's a dangerous acceptance of slow-moving trends," says Concours research director Bob Morison, alluding to the well-known experiment in which frogs subjected to slowly increasing water temperature failed to notice the change in time to save themselves.

"Demographics move at the speed of life, so the problems accumulate slowly," he says. "There's no crisis yet, and crises are what govern the economics at a lot of companies."

Concours' goal, Morison says, is to "sound the alarm without being alarmist."

Specifically, he says companies need to address the following seven challenges if they are to minimize the negative impact of a graying workforce:

1. Recruiting young workers.
2. Keeping midcareer workers engaged.
3. Transcending age bias to leverage the expertise of older workers.
4. Embracing flexible work arrangements.
5. Identifying and filling skills gaps and mastering training challenges.
6. Aligning compensation and benefits.
7. Anticipating demographically driven labor shortages.

– Julia King

BRAIN DRAIN

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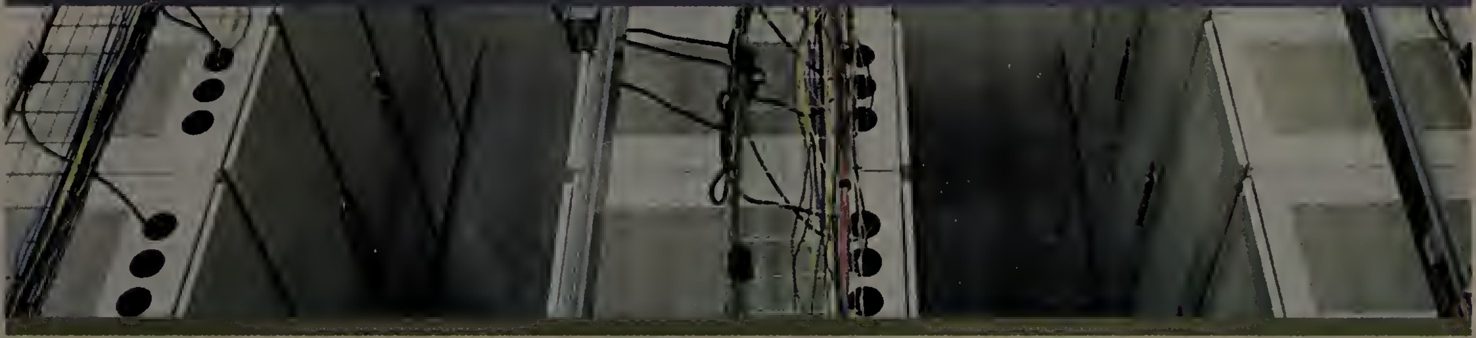

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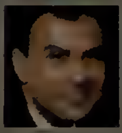

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Chat Provides Competitive Edge

We tend to think of instant messaging as the not-very-important electronic chatter of teenagers and white-collar workers. But an innovative auto-racing team is proving that chat can be a powerful tool outside the office.

The NASCAR and Indy Racing League teams of Chip Ganassi Racing use IM to achieve faster and more productive pit stops. The teams' pit crews use tablet PCs, an encrypted wireless LAN and Microsoft Corp.'s Live Communications Server 2003 to exchange handwritten notes, says IT manager Michael Carbone.

Pittsburgh-based Chip Ganassi Racing may have three cars in a race. IM allows the crews to coordinate the timing of pit stops, exchange engine-tuning strategies, estimate fuel mileage and share the drivers' radioed comments. For example, a pit crew may adjust the tire pressure and then get driver feedback on whether it's helping. "It's better than radio, because it's difficult to find a radio channel," says Mark Paxton, an R&D engineer for Chip Ganassi. Plus, radio chatter is hard to hear through the background noise of the racetrack, and IM eliminates the need for runners to relay messages to other pit locations.

R&D ENGINEER Mark Paxton uses a tablet PC and instant messaging at the racetrack.

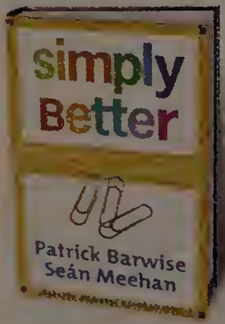
Why aren't other racing teams using IM at the track? Carbone and Paxton say they're aren't sure, but maybe the other teams aren't willing to make the upfront IT investment or lack the culture of innovation. ⓠ 48980

– Mitch Betts

Best Bits

The most useful parts of recent business and IT management books.

THE BOOK: ***Simply Better: Winning and Keeping Customers by Delivering What Matters Most,*** by Patrick Barwise and Sean Meehan (Harvard Business School Press, 2004).



For the past decade, gurus have said the way to win and keep customers is to think "outside the box" and offer unique products that set you apart from the competition. But the authors of this back-to-basics book say that's hogwash; the key is to ask customers what really matters and then deliver it reliably. For example, customers at a gas station want to refuel at a reasonable cost, get in and out fast and have a clean bathroom — not necessarily a great cappuccino.

Technology can play a role in delivering the simply better service. U.K. grocery chain Tesco PLC has succeeded in the online grocery business (where Webvan failed) by focusing on how to make it easier for Lynne Pullam — a busy mother of three who was Tesco's no-nonsense Internet consultant — to shop for groceries. Now Tesco.com accounts for about 10% of all online retail commerce in the U.K.

Cemex SA, a huge cement company in Mexico, also listened to its customers. The foreman at a construction site needs to know when the cement truck will arrive. Normally, cement ordered one day will be delivered the next day within three hours of the scheduled time. But Cemex guarantees same-day delivery within 20 minutes of the scheduled time in designated areas, regardless of weather conditions and traffic jams. How? Cemex uses a satellite- and Web-based truck-dispatch system to speed and monitor deliveries.

"The lesson from Cemex is to think through the whole purchase and usage process experienced by the customer," the authors conclude. Amen to that.

— Mitch Betts

GOT ANY BRIGHT IDEAS? *Send them to pitches@computerworld.com.*

No Respect

The following companies were at the bottom of the list of 100 U.S. companies ranked by how well they treat their online customers. The index covers factors such as Web site usability, privacy and responsiveness.

Customer Respect Index

INDUSTRY AVERAGE		6.2
96.	Sysco Corp.	3.7
97.	Pfizer Inc.	3.6
98.	Weyerhaeuser Co.	3.5
99.	Johnson Controls Inc.	3.2
100.	Supervalu Inc.	2.7

SOURCE: The Customer Respect Group Inc., Bellevue, Wash., June 2004

The IT [illegible]

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Hot Spots

INDIA, CHINA

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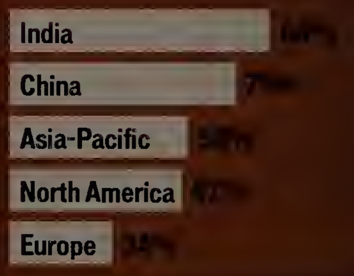

BASE: Global survey of 187 CIOs and chief technology officers.

SOURCE: McKinsey & Co., New York, July 2004

Overhyped

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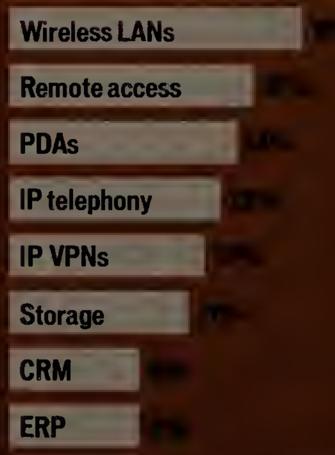

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8:15am to 8:45am	**Consolidation and the Data Center: Boosting Business Performance and Application Availability** Richard Villars, Vice President, Storage Systems Research, IDC
8:45am to 9:15am	**User Case Study — Hilton Hotels: Considering the Next Generation Network** Damien Bean, Vice President, Corporate Systems, Hilton Hotels
9:15am to 9:45am	**User Case Study — MasterCard International** Jerry McElhatton, Senior Executive Vice President, Global Technology and Operations, MasterCard International
9:45am to 10:15am	Refreshment and Networking Break
10:15am to 10:45am	**Perspectives from an End User**
10:45am to 11:15am	**Customer Challenges and Solutions: Real-Life Scenarios Connecting Data Centers Over Distance** Steve Adolph, CTO, Enterprise Solutions Group, CIENA
11:15am to Noon	**Panel: Overcoming Management Barriers — Making the Case for Consolidation** Panel Moderator: Don Tennant, Editor in Chief, Computerworld Panelists: Damien Bean, Vice President, Corporate Systems, Hilton Hotels; Frank Enfanto, Vice President, Operations Delivery & Information Security, Blue Cross Blue Shield of Massachusetts; Steve Goldman, Director, Network Architecture, Chicago Mercantile Exchange; Ron Kifer, Vice President, Program Management, DHL Express; Jerry McElhatton, Senior Executive Vice President, Global Technology and Operations, MasterCard International
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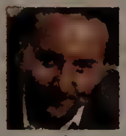

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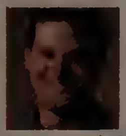

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STOP Wasting Time

How IT management teams can make better, faster decisions.

The typical company's senior executives spend less than three hours a month working together on strategic issues, and those hours are seldom well spent, says **Michael C. Mankins** *in September's* Harvard Business Review. *Mankins, a San Francisco-based managing partner at consulting firm Marakon Associates, told* Computerworld*'s Kathleen Melymuka what's wrong with team decision-making and how to fix it.*

Do the techniques you advocate for executive committees apply equally to a CIO and his management team? Yes. The best practice is for a company to have agendas at all levels, not just for executive teams. But the idea is to be aligned around making decisions that are somehow linked to the long-term value of the company. The CIO has a lot of decisions that impact the long-term value of the company directly, like "Do we outsource IT?" [and] "Which ERP system do we implement?" Those are decisions that have enormous impact on company value directly.

Just as important, effective agenda management depends on having high-quality information in executive hands, and the CIO has to get engaged in that process, so it's a dual role.

Why do management teams spend so little time on strategic issues? The good reasons are that executives are obsessed with operating performance and spend a huge amount of time — roughly half — reviewing operating performance. Add leadership succession and employee issues, and it leaves little time for strategy. It's not an excuse, but it's a reason. The not-so-good reason is poor agenda-setting. You get a review of operational performance scheduled for the first half [of the meeting], and it takes up three quarters, and there are four more items to get done. The result is that strategy tends to be one of those that gets squeezed out.

How do management teams tend to set agendas? Often, there is no individual responsible for setting agendas, so a secretary or administrative assistant does it. As a result, meetings tend to be poorly focused and misprioritized. There are three main ways agendas get set. [The first one is] "first in, first on," where the crises of the moment are phoned in just before the meeting and they go on the agenda. Second is historical precedent. Agendas at some very large companies are preset based on what was covered last year at that time: May is HR, June is the advertising campaign. Third, and probably a growing trend, is egalitarianism. Everyone gets time to speak.

What's wrong with that? The result of all this is that it would be a coincidence if the most important issues got the most time, and so the effectiveness and efficiency of decision-making tends to go down. Invariably, the urgent crowds out the important. Trivial issues on top of mind tend to dominate. We found a bank where the executives spent more time on the holiday card than their entire strategy for Africa, where they had made large investments. Loud voices tend to dominate decision-making. There's no process for getting the top issues on the agenda and for making decisions when they do get on.

Why do management meetings fail to produce real decisions? To make a decision, you have to have all the facts, you need real alternatives, you need to be asked to make a choice, and the choice needs to be embedded in some form of contract. Absent that, you fail to produce important decisions.

You recommend separating operational discussions from strategy meetings. Why? They require different mind-sets. Operating reviews are all about "Did you deliver what you promised?" They're looking in a rearview mirror. Strategy is about creativity, a search for alternatives, a dialogue around what's possible. It's about raising eyes to the horizon, not holding noses to the grindstone. It's hard to have both mind-sets at the same time.

You talk about the need to focus on decision-making, not on discussion, but how does a management team actually do that? First, you set the stage for what the meeting is all about. You make it clear which items on the agenda are actually for a decision. When you do that, people find creative ways to share information outside the meeting, so more time is focused on decision-making and action. Then you set common standards for decision-making: If you want to make a decision, you have to have facts around why an issue is on the agenda, alternatives that are weighted as to which will deliver the most value and why, and how to execute. If you don't have that, you can't make a decision.

Meeting Time-Savers

Consultant **Michael C. Mankins** provides the following guidelines for running better meetings.

- **Separate operations from strategy.**
- **Focus on decisions, not discussions.**
- **Measure the value of all agenda items.**
- **Move issues off the agenda quickly.**
- **Put real options on the table.**
- **Use common decision-making processes and language.**
- **Make decisions stick.**

How do you come up with good alternatives? The issue needs to be stated in a way that doesn't prescribe a course of action but instead lends itself to alternatives. For IT execs, "How do we produce the highest-quality information at the lowest cost for Unit X?" That lends itself to alternatives. But, "Should we outsource IT?" does not. That's a bimodal decision: yes/no. In business, those questions get answered with, "It depends." But questions that lend themselves to alternatives lend themselves to choices. Frame issues so that they have to be resolved by looking at alternatives. You also need good information. Good facts lend themselves to the development of good alternatives. And you need the right state of mind — that there's always a better alternative. Never say, "We've found the right strategy." There's always a better one; you just haven't thought of it yet.

What is a common decision language, and how important is it? A lot of processes get bogged down because they don't know what the choice is based on: It might hurt our image; we won't be perceived as a technology leader. Those are interesting, but none is a choice criterion. Unless everyone has the same choice criteria in mind, it's really hard to get focused to produce the right information to help decisions get made. If you say all choices will be made based on their impact on the long-term value of the company, that's the ultimate choice criterion.

Why is it often hard to make a decision stick? Many companies don't actually approve strategies, so the organization doesn't know that a decision has been made. Or it's made, but at so abstract a level that you can't do anything about it. Or you don't know who's accountable for doing what, so execution gets delayed. Or there's no consequence to not executing. You can attack all four causes: Improve your strategies, make them concrete, assign accountabilities clearly, embed them in performance contracts with individuals, and ensure consequences for failure to execute. **48955**

This is the latest in a series of monthly discussions with Harvard Business Review authors on topics of interest to IT managers.

Career Watch

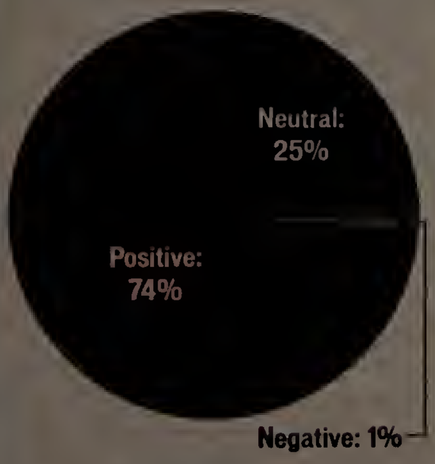
NEWS CLIPS

IBM has boosted its outlook for hiring this year to 18,800 jobs worldwide, up from 15,000. IBM told *The Wall Street Journal* that the plan reflects its view that the computer and services market is continuing to expand. The hiring plan will leave IBM with more than 330,000 employees by year's end, up from 319,000 at the end of 2003. That will be the highest level of employment at the company since 1991, when it had 344,000 workers at year's end, according to the newspaper. After that, IBM slashed its workforce in a desperate fight for survival, reducing its employment to a low of 219,000 in 1994. About one-third of the new hires reportedly will be in the U.S. IBM said most of the hiring will be in its global services and business consulting areas, and some will be offset by reductions in the workforce through attrition or what IBM calls "skills rebalancing" – getting rid of workers whose talents are no longer in demand.

– Julia King

Executive Outlook

What is your outlook in general for the executive search business over the next six months?



In which sectors do you expect to see the most growth in the next six months?

Banking/financial services	49%
Manufacturing	38%
Pharmaceuticals/biotech	38%
Consumer products	31%
Health care	28%
IT	26%
Professional services (law, HR, consulting, etc.)	25%
Telecommunications	18%
Retail	16%
Marketing/advertising/ communications	9%
Government	7%
Education	6%
Transportation	6%
Media/entertainment	5%
Hotels/tourism	3%
Publishing	3%
Nonprofits	2%

Base (for both charts): 162 global executive search consultants

SOURCE ASSOCIATION OF EXECUTIVE SEARCH CONSULTANTS, NEW YORK, AUGUST 2004

Jean Delaney Nelson

Q&A

TITLE: Vice president and CIO

COMPANY: Minnesota Life Insurance Co., St. Paul, Minn.

WHAT SHE DOES: Delaney Nelson joined her current employer more than 25 years ago, as a college intern. Over the past two-plus decades, she has filled a variety of posts in application development, project management and design, and coordination of IT training. She was named CIO in 2000. She gave *Computerworld*'s Julia King her perspective on the advantages of hiring entry-level IT professionals and promoting from within – one of the hallmarks of IT staffing at Minnesota Life, where the IT employee turnover rate this year is 4.7%.

How has your own longevity at the company influenced IT recruitment and retention policies? I'm a big proponent of internships. It was as a result of my own internship that I decided to pursue a career in IS. I was a math major, and I remember being asked what I was going to do. I always said "No way" when computers came up. Then I came here and was an intern for a summer. It was such a positive experience for me, and then they offered me a position. That motivated me to get an internship program going. Now we have 12 to 24 internships each summer. It gives interns a chance to try out the workplace and build their résumés. For us, it's a chance to look at these people – to see if there's a fit. When we do hire someone off an internship, it tends to be a strong match because we [both] know what we're getting.

What are the advantages of hiring entry-level IT workers and growing talent from within? One of the pluses of entry-level hiring is that it's a strong motivator to people. They know that if they work hard, they'll be rewarded based on their performance and they'll get the first shot at new opportunities. You also grow more of a culture within the organization. Since you grow internally, you create a certain culture and philosophy.

Any downsides? One of the risks of entry-level hiring is lack of exposure to other environments. Without this exposure, there may not be enough questioning and challenging of the status quo. We mitigate this risk by providing exposure to user groups and professional organizations and through conference participation. We feel this balances the downside of experienced hiring, where associates feel they have to leave the organization to get ahead.

In your opinion, how important is job stability to overall IT employee morale these days? In the past, job stability was not that important because people knew they could get 10 other IT jobs if they wanted to. But since Sept. 11, stability has moved up in terms of what's important to morale, followed by the opportunity to be challenged and to grow, which includes training. People still want the opportunity to be challenged and to advance. **48890**

FROM BOOT CAMP TO CORPORATE HQ

Corporate recruiters are courting college graduates who are fresh from an expanding number of business finishing schools, according to the August issue of the online newsletter "Workforce Management."

The summer programs, run by prestigious schools, including Dartmouth College's Tuck School, the University of California, Berkeley's Haas School, New York University's Stern School and Stanford University's Graduate School of Business, offer students the chance to learn from respected MBA professors and rub shoulders with like-minded overachievers who would rather spend the summer becoming more marketable than surfing.

Graduates of the programs have gotten jobs at Fortune 1,000 companies, according to school officials. Students at the Haas School's 6-year-old Business for Arts, Sciences and Engineering program have joined DHL International Ltd., General Electric Co., Ogilvy & Mather Worldwide and United Parcel Service Inc., to name a few. Alumni of the 4-year-old Stern Advantage Program have gone on to jobs with Pfizer Inc., Boston Capital Corp. and CIBC World Markets Holdings Inc.

PAUL GLEN

Accountability Vs. Blame

I'VE DISCOVERED THAT most of the time, when executives tell me that "what we need around here is more accountability," what they really mean is, "I need to know who I should blame when things go wrong."

The sentence that usually follows implies that without accountability, no one will do what it takes to meet deadlines, deliver quality products or succeed in general. Just below the surface, the assumption behind this thinking is that fear of blame — or at least fear of the consequences associated with blame — is an effective motivator.

PAUL GLEN is an IT management consultant in Los Angeles and the author of the award-winning book *Leading Geeks: How to Manage and Lead the People Who Deliver Technology* (Jossey-Bass Pfeiffer, 2003; *www.leadinggeeks.com*). He can be reached at **info@c2-consulting.com**

If your goal as a manager is to enforce compliance with well-articulated policy and adherence to established procedures, this may be a reasonable way to think. But for most of us in IT, our goal is to help our staffs apply their knowledge and creativity to the broad array of problems presented to them.

Fear isn't a particularly potent motivator when it comes to inducing creativity. If it were, editors would simply threaten to lock novelists in gulags until they produced Pulitzer Prize-winning prose.

As a manager, you must understand the difference between accountability and blame.

One morning back when I was managing a group of consultants, I received a call from Jim, a very conscientious senior programmer. Just from the way he said hello, I could tell he was in a state of near panic. "I've got a serious problem," he told me. "I accidentally deleted the entire source-code library for the project I'm working on, and it turns out that the client wasn't backing up the disk. I never thought to ask. What do I do?"

I asked Jim how much work he had lost, and he explained that he had been working on this particular project for about a month. I asked, "Given that you've already been working on this, how long do you think it will take to re-create the lost code?" He said he thought it would take a week, and then he asked again, "What should I do?"

I told him to do two things. "Go tell the client exactly what happened and that we will figure out a fair way to take care of the consequences of the problem. Get to work on re-creating the code."

Less than 24 hours later, Jim called, sounding tired but relieved, to tell me that he had completely re-created the lost code. "Great," I told him, "now go do two more things. Update the client and tell them that we won't charge them for the lost day, and make sure that they start backing up the code library."

There was a long pause, and finally Jim asked me, "That's it? You're not going to fire me?" I told him, "I don't fire people for making mistakes. I fire them for making the same mistakes repeatedly. Do you know what mistakes you made?"

"Yeah," he said, somewhat tentatively. "I assumed that they were backing up, but I didn't check, and I deleted files without thinking."

"Good," I said. "Now don't make those mistakes again. Next time, make better ones."

Nothing more was ever said about the incident, and Jim remained a loyal and productive employee for many years.

For me, this event helped to draw the distinctions between accountability and blame. In my mind, accountability is the ability to discern and attribute individual and collective results. Blame is about who is going to pay the price for problems. If there's no clear accountability (and even if there is), you can blame anyone for problems. But fear of being the whipping boy isn't going to help you build a productive, learning organization.

That day, I learned that I didn't need to blame Jim. With clear accountability, he learned what he needed to learn from his mistake. Beating him up over the error would only have made him more defensive and less likely to learn from the situation.

Both accountability and blame have roles to play in good management. If you think carefully about the distinctions between the two, your responses to problems can be much more nuanced and tailored to both the situation at hand and the needs of individual employees. 48719

WANT OUR OPINION?

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BRIEFS

Chicago Public Schools Pick Ciber

■ Ciber Inc. has won a contract with the Chicago Public Schools to streamline the administration of special education services. As part of the project, the Greenwood Village, Colo.-based systems integrator will implement Learning Tools International Inc.'s GoalView, a multilingual, Web-based information system that will be used by students, faculty members, case managers, clinicians and support staffers.

Booz Allen Expands Getronics Deal

■ Getronics North America in Billerica, Mass., and Booz Allen Hamilton Inc. announced a three-year, $25 million contract under which Getronics will provide remote and on-site management and support of desktop technologies used by Booz Allen employees. The contract expands a previous agreement and is expected to save Booz Allen more than 25% in IT support costs over three years.

Qwest Signs With Krispy Kreme

■ Qwest Communications International Inc. in Denver announced a three-year agreement with Krispy Kreme Doughnuts Inc. to deliver data and voice services, including private routed network and network management services and long-distance voice services.

Field Museum Goes Wireless

■ Concourse Communications Group LLC, a wireless network operator in Chicago, has agreed to install and manage an in-building commercial wireless network and the rooftop rights for external coverage at The Field Museum in Chicago. The system, which is expected to be operational late this year, will support cellular voice and data services and high-speed wireless Internet access.

Tivoli Key

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Advertising Supplement

IT Careers in E-Business

Remember when the question was whether e-business would ever result in real dollars being earned by anyone? The question has been answered as industries have turned the Internet into a tool that is increasing revenue numbers.

Amazon.com and eBay have reported significant revenue and profit growth. Second quarter sales for Amazon.com were up 26% compared to a year ago, while eBay reported a quarterly revenue increase of 52%. The third and fourth quarters of 2004, traditionally best quarters for both entities, promise to continue the trend.

In addition, both have purchased international market share. EBay has completed the acquisition of Baazee.com, adding 17 million users in India to its presence. Amazon.com has announced the acquisition of Joyo LLT, and its access to 80 million customers in China.

A cadre of other businesses using e-business technologies joins the traditional e-tailers. Airlines are driving down overhead costs by turning to online sales of tickets, while some traditional brick and mortar retailers are combining in-store, catalog and online technologies to bring in customers.

In addition, all retailers are turning to the use of radio frequency identification (RFID) to improve operations supporting those sales. IDC, the research arm of IDG, estimates that RFID expenditures will top $1.3 billion by 2008, when the one-time surge will return to earth.

Given all the good news, the priority question is what this means to IT professionals. The growth shows in a slow, but steady increase in jobs as well.

Both Amazon and eBay list a variety of jobs currently open with the vast majority in software development, and analysis. Amazon is shifting approximately 40 software development jobs to its new Software Development Centre in Scotland during the second half the year, but will maintain staffing in San Jose as well. EBay similarly has job postings in IT, to include software engineering and systems. The requirement for knowing customers and individualizing market to specific niche groups has created additional information technology requirements and staffing needs. This category includes data storage/management/mining, customer relationship management and self-service capabilities. What you don't see are core jobs in web development, but rather jobs that span the operation to provide solutions to the primary question – how to sell to an increasingly picky customer.

For more information about IT Careers advertising, please contact: Nancy Percival
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Produced by Carole R. Hedden

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Represents agency in meetings with federal, state and legislative officials. Requires current technical experience and demonstrated expertise supporting IBM ES9000 MVS/ESA/IMS/DB2, UNISYS A19 MCP/ DMSII, AIX/Unix/Oracle, and LAN/Novell. Experience with internet applications design and development, desired. Background and experience with federal oversight agencies is highly desirable. Demonstrated success in public administration with associated regulatory and state oversight entities highly desirable. Requires interaction with stakeholders and external interested parties regarding complex, highly visible projects.

CHILDREN & FAMILIES

Chief Information Officer

Requires effective interaction with customers and developers to ensure the successful delivery and implementation of projects, updates and modifications to the production environment. Must be able to work effectively with senior departmental managers as well as executives with other state agencies to achieve smooth and timely project development and conversion for clients. Desire strong background and demonstrated success in deploying productivity tools for workforce and agency processes. Responsible for charting agency strategic direction in client/server and distributed/decentralized processing. Qualifications: Excellent organizational, analytical, writing and public speaking skills are desired. A bachelor's degree from an accredited college or university and progressively responsible leadership experience in analytical and/or technical data processing fields. Prefer experience in a managerial capacity for a medium to large data center. Experience as described above can substitute on a year-for-year basis for the required college education.

Submit resume and/or State of Florida employment application to: Jo Moore, Department of Children & Families Technology Centre, 1940 North Monroe Street, Suite 80, Tallahassee, Florida 32399-0710; FAX (850) 487-8173; Jo_Moore@DCF.State.FL.US DEADLINE: 5 P.M., September 8, 2004. EEO/AA Employer/Veterans Preference. Those persons who require special accommodations during the selection process, should call Jo Moore at (850) 487-8169.

IT PROFESSIONALS

Manager

(Glen Mills, PA and other locations throughout the United States). Responsible for the design, architecture and implementation of payment systems with primary focus on card processing and authorization systems, as well as back-end clearing and settlement systems. Implement architecture design involving intra/inter-enterprise integration, back-end integration, batch processes, data conversion for high performance scalable systems and adaptors implementations using tools included in payment system applications. Utilize Ab Initio data processing platform for batch data processing and complete meta data management across the enterprise. Utilize Enterprise Integration middleware tools (MQ Series or WebMethods) with build-in adaptors to submit data to various c-tree database. Utilize IBM Tivoli for system resource monitoring and Thales Hardware security module for cryptographic services. Responsible for planning engagements and leading teams in implementation of payment systems based on established industry standards (ISO 8583). Responsible for Managing integration and testing of payment systems using automated load and system testing tools (Mercury LoadRunner, WinRunner).

$100,895/year. Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Computer Science, Engineering (any), Management (any), or Business Administration plus 5 years of experience in the job offered or 5 years of experience as an Analyst, Associate, Consultant, Senior Consultant or Programmer. Employer will regard a foreign degree to be equivalent to a U.S. Bachelor's degree as determined by an accredited credentials evaluation service. Related experience must include at least two years experience utilizing Card Processing & authorization systems, Back-end clearing and settlement systems, Programming Languages (C++, Java), c-Tree database, Mercury Load Runner, and Thales Hardware security module for cryptographic services.

Please send your resume, referencing Job Order Number **WEB450022** to the: PA CareerLink, FLC Unit, 235 W. Chelten Avenue, Philadelphia, PA 19144. EOE.

Senior Business Analyst. Harleysville Insurance Group, Harleysville, PA seeks individual to lead, manage & implement projects focused on re-engineering processes with focus on continued improvement. Qual. apps. must have MS in CS, Engineering or quantitative discipline and prior exp. gathering requirements, defining process improvements & working with end users. Submit res. to HR Dept resumes@imrlp.com.

Principal Software Engineer: Primary responsibility for the development of networking software. Responsible for functional spec dev, arch design, implementation and verification. MS or foreign equiv. in EE or CS plus 5 yr. exp. that must include 3 yr. with one or more network protocols including IP, TCP, ARP, DHCP, DNS, SNMP,and firewall. . Must be familiar with IP QOS protocols and RFCs. Must have development exp. with Linux. and In C/C++. Please send resume to Ucentric Systems, 2 Clock Tower Place, Suite 550, Maynard, MA 01754, Attn to Pat Riley.

Programmer Analysts to design, develop, test, implement appls using Siebel tools, C, C++, Java, ASP, Oracle, JavaScript, VB-Script, HTML, JDK, JDBC, Visual Basic, etc using UNIX and Windows OS; develop, enhance components of new/existing appls and databases; perform reqs gathering, analysis, planning, testing, implementation & troubleshooting. Require: BS or foreign equiv in CS or Engg(any branch) with 2 yr exp In IT. High salary. F/T position. Travel involved. Resume to HR, Smartsoft International, Inc., 3965 Johns Creek Court, Suwanee, GA 30024.

Computers-Software Engineers needed. Seeking quel. candidates possessing MS or equiv. and/or rel. work exp. Part of the req. rel. exp. must Include 2 yrs. working with C/C++, TCP/IP and Linux Kernel. Duties include: Develop, design and test Mobile VPN, IPSEC, IP Layers modules and TCP/IP protocol device drivers; Integrate FIPS complaint security software and hardware components end hardware crypto cards; Work with C/C++, Intel Assembly and Linux Kernel. Fwd. resume & ref. to: Ecutel Systems, Inc., Attn: HR, 2300 Corporate Park Dr., #410, Herndon, VA 20171.

Senior Programmer Analyst. Support and development of fixed income trading system in Java, J2EE and Oracle. Must have Bacheior's in Computer Sci. or related, 2 yrs. exp. In job offered or Sr. Programmer or related, and knowledge of core Java, Swing, J2EE technologies, XML, Linux, Websphere Application Server, and Oracle. Send resume to SANS Consulting Services, Inc., Attn: Alex Shteyman, 90 John St., Suite 313, New York, NY 10038.

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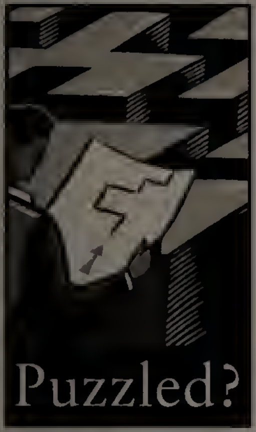

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IT PROFESSIONALS

Manager

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$135,000/year. Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree in Economics, Business, Finance, or Mathematics plus 5 years of experience in the job offered or 5 years of experience as e Senior Consultant, Consultant, Analyst, or related occupation. Related experience must include international work in financial services industry, management of cross-functional teams, and enterprise-wide implementations, and demonstration of client relationship development and growth within leading financial institutions.

Please send your resume, referencing Job Order Number WEB447909 to the: PA CareerLink, FLC Unit, 235 W. Chelten Avenue, Philadelphia, PA 19144. EOE.

SAP BI Project Manager

Ensure highest quality SAP Business Intelligence implementation by providing expertise & guidance to client through extensive on-site support; understand needs & req'ts of business process; As SAP BI PM; provide direction to both consultants & clients; provide knowledge of SAP product implementation via BI strategy engagements & BI implementation projects; enable clients to get the most out of SAP BI investment; develop task schedule & coordinate activities based on meeting specific req'ts. Travel req. BS in Comp. Science, MIS or related field and 4 years SAP exp. w/ multiple years SAP BI implementations & project mgmt exp. Competitive salary. Send resume to Compendit, Attn: HR, 150 N. Michigan, Ste 3400, Chicago, IL 60601.

Luceo, Inc. seeks Programmer based out of our Naperville, IL loc. Design, code, test, implement, & maintain new/revised programs, web pages, scripts, database applications, reports, new networks, network based applications & other software. Use SQL server, .Net framework, HTML, XML, WMI, ASP, VB Script and Dreamweaver MX. Windows NT/2000/2003 servers; networks, TCP/IP & other LAN/WAN protocols; Active Directory & Exchange; Perl script, TCL/TK & Shell scripting In UNIX. Some travel required. Must have Bachelor Information Systems, Business Administration or related + 2 yrs relevant exp. Resume to Luceo, Inc., 1431 Kallien Avenue, Naperville, IL 60540.

Sr Software Engineer. Design & implement s/ware apps. Masters or equiv in CS or similar major. Will accept bachelors plus 5 yrs progressive exp in s/ware eng'g or analyst position in lieu of a masters. Prior exp or edu must include Java, J2EE, and WebObjects. Contact JR Scholl, HR Generalist, Job #1915.36, Academic Mgmt Svcs, 463 Swansea Mall Dr, Swansea, MA 02760.

Sr. Systems Analyst/Project Mgr. needed to lead analysis of client bus. process/acctg. requirements for implement. of custom ERP business/acctg. software. Requires degree + exper. & Microsoft Navision Axapta certification. Exper. must incl: Axapta X++ programming; Functional Requirements & Gap-fit anal. reporting; demonstrated understand. of gen. acctg. procedures. Based in Menlo Park, CA - Travel up to 80% in N. CA. Send resume to: S. Mauser, Specialists in Custom Software, 2120 Colorado Ave., Suite 150, Santa Monica, CA 90404. Must be able to work without employer sponsorship.

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SENIOR WEB DEVELOPMENT ANALYST

ADT Security Services, Inc. has an opening in Boca Raton, Florida for a Senior Web Development Analyst.

Analyze business procedures and problems to develop specifications and convert them to programmable form for electronic data processing. Confer with organizational units involved to determine specific web output requirements. Study existing data systems to evaluate effectiveness and develop new, or modify current, web systems to improve production workflow.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field, and relevant work experience. Experience must include Oracle, SQL and WebSphere Administration.

Resume and/or cover letter must reflect each requirement above and specify reference code SWDA/ZHS or it will be rejected.

Forward resume to Theresa Maia, ADT Security Services, Inc., One Town Center Road, Boca Raton, FL 33486.

IT Analyst I

Roxane Laboratories, Inc. has an immediate opening in its Columbus, Ohio office for the position of IT Analyst I.

Assists with maintaining codes for new systems, builds install packages, ensures that all solutions are implemented in a timely manner and properly tested, edits application component functional specifications and technical design documents and assists with web development.

Must possess a Bachelor's degree in Management Information Systems, Business, Computer Science or a related field and relevant experience, including college course/project work and/or work experience with PowerBuilder, Enterprise Java Bean, C# and Delphi.

Resume and/or cover letter must reflect each requirement above and specify reference code AD-GCD/GC0804 or it will be rejected.

Forward resume to BI Staffing Center, PO Box 534, Waltham, MA 02454. Fax number: (781) 663-2431. Email: BIPI@BI-careers.com. EOE.

Database Administrator. Design, install, administrate and maintain SQL server database running warehouse application system on SQL 2000. Develop and support company web based and SQL based application using NET, ASP, Java, VB and Access. Perform day-to-day SQL Server DBA activities. Prepare project plan and schedules, and ensure implementation of projects. Test new application programs/modification to ensure technical applicability and specification compliance. Require Bachelor Degree in Computer Science or a related field with minimum of 4 years related experience. Apply to: Pleaser USA Inc., 679 S. Placentia Ave., Fullerton, CA 92831, Attn: Ms. Fong.

SOFTWARE ENGINEERS (12 positions): require Bachelor's or equivalent in Engineering/Computer Science/Mathematics/Science or closely related field with two years experience providing skills in described duties, at $79,000 per year. Provide on-site consulting in design, analysis and development of software for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SQL Server and Sybase; e-commerce and web systems development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 application systems on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resumes to: YASH Technologies, Inc., 605 17th Avenue, Suite 1, East Moline, IL 61244.

Programmer, Engineering - 8a-5p; 40hrs/wk. Integrate construction mgmt & civil engg s/ware w/Oracle to achieve optimum inventory mgmt, procurement planning; convert technical specs to flow charts, modules, prgm using comp aided drawings, Oracle & Developer 2000; test prgm. Req. Bach or equiv w/major in Comp Sci/Engg, Electronics, Electrical, Civil or related field of Engg. & 1 yr exp in job offd or as Systms/Software/IT Prof'l using above comp skills. Resume: Nextgen Infotech, Inc., 2090 Beaver Ruin Rd., Ste. 500, Norcross, GA 30071.

IT PROFESSIONALS

Consultant

(Glen Mills, Pennsylvania and other locations throughout the U.S.). Implement Supply Chain Processes in areas such as demand planning, inventory planning & management, production planning & operations, material replenishment, and logistics. Conduct the "as-is" analysis of client's current processes and systems, utilize industry best-practices, and design the "to-be" processes. Salary is $78,686per year. Mon-Fri, 9:00 am to 5:00 pm. The position requires: Bachelor's degree in Business Administration, Engineering (any), Information Systems, Math, or Computer Science + 2 years of experience in the job offered or 2 years of experience as a Consultant, Systems Analyst, or Assistant Manager Related experience must include at least 6 months of: Supply Chain Processes and Systems Including: "as-is" analysis, "to-be" design, demand planning, inventory planning & management, production planning & operetions, material replenishment, and logistics.

Please send your resume, referencing Job Order Number WEB448786 to the: PA Careerlink, FLC Unit, 235 W. Chelten Avenue. Philadelphia, PA 19144. EOE.

Position for Systems Analyst. Provide requirements, design and implementation deliverables and estimates to accommodate business needs utilizing knowledge of magazine fulfillment processing. Identify and evaluate opportunities to improve existing system processes. Review test plans, data and/or results prepared and executed by applications development for accuracy and thoroughness. Provide analytical and technical assistance to resolve production problems Provide functional supervision, technical direction and leadership to other team members Utilizes expertise in Assembler, Cobol, CICS, JCL and TSO/ ISPF, to develop and maintain quality computer systems on time end within budget. 40 hours per week. Hours are 8:00 a.m. to 5:00 p.m., Monday through Friday Must heve Master's Degree in Computer Information Systems or equivalent. Pey is $60,000 per year. Job Order No FL-2552563. Job located in Tampa, Fl. Send resume to Agency for Workforce Innovation, P.O. Box 10869. Tallahassee, Fl 32302.

IT PROFESSIONALS:

POSITION: Consultant (Glen Mills, Pennsylvania and other locations through the U.S.). Develop new modules for the systems and trained developers. Provide assistance to the design, architecture and configuration management teams to resolve conflicts within the system, enhance the application infrastructure, maintain high quality standards and sustain stability of the system. Support the system during disaster recovery testing and expiration weekends. Monitor application stability and perform environment maintenance using IBM Web Sphere Application Server and Sun ONE Web Server. Assist senior designers in the design of reporting screens and work with a team of junior developers and analyst in the development of these reports and integration into the system using Brio Reports. Work with Java and Extensible Markup Language (XML) in developing the applications front-end using Java Server Pages (JSP's), Java servlets, Apache Struts framework, and control structures within the Java 2 Platform, Enterprise Edition (J2EE) framework. Use IBM's WebSphere Studio Application Developer 4.0 as the primary development tool. Work on the UNIX platform to develop CORBA components as the middleware solution to connect to C++ servers. Assist in the enhancement of time related performance by modifying Structured Ouery Language's (SOL's) in DB2.

WAGE: $74,751.70/year
Hours: Monday-Friday 9:00am-5:00pm

MINIMUM REOUIREMENTS:
Bachelor's degree in Computer Science, Business, MIS, or Information Technology + 1 year exp. in the job offered or 1 year exp. as a Consultant, Senior Developer, Senior Systems Analyst, Systems Analyst, or Junior Systems Analyst. Related experience must include at least one year of J2EE, JSP, and Java Servlets; Apache Struts Framework; IBM's WebSphere Studio Application Developer 4.0 and WebSphere Application Server; SQL and DB2; XML; and UNIX and CORBA.

Please send your resume, referencing Job Order Number WEB447883 to the: PA Careerlink, FLC Unit, 235 W Chelten Ave., Philadelphia, PA 19144. EOE.

Silicon Laboratories Inc. is hiring for the following position: Optical Networking IC Design Engr - Analog & digital circuit design for high-speed commun. apps. Min req: MSEE + 3 yrs exp in mixed-signal IC design. Openings in Nashua, NH and Austin, TX. Complete job description at www.silabs.com/careers. Send resume to jobs_er@silabs.com or HR Dept, 4635 Boston Lane, Austin, TX 78735. NO IN PERSON APPLICATION.

Sr. Systems Analysts to lead teams to analyze, design, develop, test, implement appls using Java, C++, VC++, VB, LabView, Matlab, MathCAD, Rational Rose, OOAD/P, UNIX etc; analyze, finalize architecture using RUP process, J2EE, UML; administer, deploy components into appl server-Websphere; develop appls as per ISO-9001, CMM level 3 methodologies; provide customer support & trouble-shoot. Require: Masters or foreign equiv. in CS/Engg. (any branch)/Business with 1 yrs exp. Travel Involved. Comp. Salary. F/T. Resumes: HR, Synergy America, Inc., 6340 Sugarloaf Parkway, Ste 140, Duluth, GA 30097.

Systems Analyst/Administrator, McLean, VA. Designs, develops, programs, installs, implements, conducts research for, & maintains Unix systems, servers & hardware. Duties include working with Solaris, Linux & other Unix Os, disaster recovery & backup, documentation, troubleshooting, security, web & application servers, SMTP, DNS, shell & Perl scripting. Bachelors in Comp. Sc./Elec. Engr. or in a related discipline & minimum 2 yrs related experience required. Send resume to Boyer Consulting Group, 7918 Jones Branch Dr. Suite 600, McLean, VA 22102.

Sr. Programmer Analysts to lead teams to analyze, design, develop appls using OOP, Java, JSP, Servlets, EJB, XML, HTML, JavaScript, Weblogic, JDBC, Oracle, etc in UNIX, Solaris, Windows OSs; develop Oracle stored procedures and data modeling; implement appls and perform strategic planning/operations support; provide end user training. Require BS or foreign equiv. in CS/Engg. (any branch) & 3 yrs exp. in IT. Comp salary, F/T, travel involved. Resume to HR, Ordusion Technologies, Inc., 3883 Rogers Bridge Road, Suite 504, Duluth, GA 30097.

Sr. Programmer Analysts: Analyze, design, develop, test, implement, software apps. for mortgage loan processing in Loanquest suite, Centura, Oracle, SQL Server, Crystal Reports and Microsoft Legacy/.NET. BS Comp. Sc/Information Tech/related field & 5 years exp., including at least 6 months exp. in job offered. Excellent communication skills-verbal & written. Excellent technical peer group to work with. Travel may be required. Send Resume to: J. Norris, Mortgageflex, 10151 Deerwood Park Blvd., Bldg. 400, Ste. 350, Jacksonville, FL 32256. No phone calls please.

Database Administrator. Bachelor's Degree in Computer Science or Engineering and 2 years experience required. Submit resume to Delia Agustin, 11718 Bedford Street, Houston, TX 77031.

Database Administrators to install, configure, maintain Oracle Appls and Oracle Dev. software; evaluate, design Oracle database structures/systems; enelyze database reqs of existing/new appls; monitor, tune for optimel performance, backup/recovery strategy planning, troubleshoot problems; maintain security of databases, test, apply patches for new releases. Require BS or foreign equiv. In CS or Engg (any branch) with 2 yrs exp in database admin. Comp. salary. Travel involved. F/T openings in Elgin, IL & Lower Gwynedd, PA. Resume to: HR, Fourth Technologies, Inc., 585 Tollgate Road, Suite 1, Elgin, IL 60123. Specify location desired, JobID DB964 on resume.

Radian Information Systems is seeking system analysts, software engineers & IT consultants to work on ERP, data werehouse, mainframe using SAP, PeopleSoft, VB, ASP, Jave Script, VSS, VBScript, Web Methods, Cognos, Unix, Oracle etc. BS/MS with exp. Contact Info@RadiantInfoSys.com. EOE.

Acro Service Is hiring: Business/MIS/Programmer/System Analysts, Software, Electronics, Electrical, Industrial, Product Design, Mech, Test Engineers & Professional Technical Recruiters. BS/MS and/or exp. required depending on positions. Send resumes to jobs@acrocorp.com. EOE.

Computers - Sr. Programmer Analysts needed. Seeking qual. candidates possessing BS or equiv. and/or rel. work exp. Part of the req. rel. exp. must include 2 years working with JDA-MMS. Duties include: Develop & enhance current existing HOST & POS systems; Work with JDA-MMS, RPG/400, CL/400, RPG/ILE & Visio Technical. Exp. in retail industry preferred. Fwd resume & references to: Cabelas, Inc., Attn: HR, One Cabela Drive, Sidney, NE 69160.

Software Engineer, Applications - 8a-5p, 40hrs/wk. Dsgn, dvlp & implmt s/ware systms & solutions w/hardware interface using ASP, Java, Javascript, VB, Visual Script, Visual Interdev, COM, DCOM, SOL & HTML. Req. 1 yr exp in job offd or as IT Prof'l & Masters or equiv in Comp Applics/Sci/Engg, Info Systms, Electronics Engg or related field. In lieu of Masters, Bach deg in specified majors & 5 yrs progressive work exp in job offd or as IT prof'l accepted. Resume: Avalon International, Inc., 3550 Engineering Dr., Ste 260, Norcross, GA 30092.

OH Information Management Firm seeks Software Developer to program, develop and implement web based applications, customer incentive systems. Min 3 month in-job/job related experience including: ASP.Net; C#; VB Net; SQL Server; XML Web Services requested. Bachelor's degree in Computer Science, Computer Engineering. Resumes to: Human Resources, The Mail Room Inc. 711 West Smith Rd., Medina, OH 44256. No calls. EOE.

Database Analyst I & II: Ensure highest quality SAP BW implementation by providing expertise & guidance to clients through extensive on-site support; coordinate & design database; analyze requirements; performance tuning; oversee & implement security measures; create manuals & train end users. Travel req. Analyst I Req. BS in Comp. Science, MIS or related field & 1 year related exp. Analyst II Req. BS in Comp. Science, MIS or related field & 2 years related experience w/ implementation at client site. Competitive Salary. Send resume to Compendit, Attn. HR., 150 N. Michigan, Ste 3400, Chi, IL 60601.

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Software Engineers to analyze, design, develop, test appls using Java, JSP, Servlets, EJB, XML, HTML, JavaScript, C, C++, Oracle etc under UNIX, Windows OS; provide architectural support, create and integrate product data stores into Siebel product module; perform Siebel CRM implementations and install Siebel servers/clients; Develop, enhance components of new/existing appls and databases; interact, train end users. Require: M.S. or foreign equiv. in CS or Engineering (any branch) with 1 yr exp in Siebel. F/T. Travel involved. Competitive salary. Resume to: HR, ABZ Consulting, Inc., 2600 Century Parkway, Ste100, Atlanta, GA 30345.

Stanford Technology Partners Inc. is an IT consulting company with its clients across the USA. We seek a Peoplesoft EPM Functional Consultant. Duties include reporting tool selection; Identifying legacy system reporting & architecture; conceptual sizing of hardware configurations for Peoplesoft reporting tools; creating conceptual design docs; assisting staff on docs, identifying gaps in source system, present EPM module to mgmt and team members for review and implantation. Job is located in Tallassee, Florida or unanticipated locations throughout the USA. If interested, please send resume to: STPI, 289 Boston Tpke #6 Shrewsbury, MA 01545 e-mail: recruiter@stpincusa.com

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Maintenance all aspects of installation, testing, and managing network systems in the business area;testing of computer hardware and supervising of its installation; testing of computer systems, and related equipment. Resume A-Soft Scientific, P.O. Box 1270, Roswell, GA 30077.

Sr Programmer Analysts: manage teams to analyze, design, maintain software appls using J2EE, Java, JSP, ASP, HTML, XML, Oracle, SOL Server on Windows/UNIX OS; perform requirements analysis and conduct functional testing/debugging; document, maintain & update use cases, GUI design, BPR scenarios. Require: BS or foreign equiv. In CS/Engg.(any branch) and 2.5 years exp in IT OR MS in CS/Engg (any branch) and 6 months exp in IT. Travel involved. F/T position. Comp. salary. Resume to: HR, Quest America, Inc., 211 East Ontario Street, Sulte 1800, Chicago, IL 60611.

Programmer Analyst needed by Soft. Dev. & Conslt. Co. Dsgn, dvlp, maintain & implmt various applics using COBOL/400, RPG/400, CL/400, QUERY/400 & SQL/400. Job to be performed in Chicago, IL & various unanticipated client sites in US, as assigned. Req 2 yrs exp in job offd, 40hrs/wk, 9a-5p, M-F. Respond to CEO, Edgesys, Inc., 555 West Madison St, Ste 1-2311, Chicago, IL 60661

Jr. Programmer Analyst. Analyze, design, develop, & deploy web appl. Using SQL Server database, .NET Technology, & support Client Server/Web based appl. Using Visual Basic, COM/DCOM, SOAP, Visual C++, MSSOL Server, ASP & Java Scripts. Req: Bachelor in Comp. Sci., Comp. Eng.Or Electrical Eng. 40hrs/wk. Job/Interview Site: Fullerton, CA. Send resume to Reliance Technologies, Inc. @2501E. Chapman Ave.#280, Fullerton, CA92831

Oracle Financials Functional Consultant. Individual to deliver full life cycle implementation of Oracle E Business suite for firm's clients based in suburban Phila & other locations. Qual. applicants must possess BS in Accounting, Bus. or related field & 5 yrs. as Oracle Implementation Consultant. Submit res. & jobs refs . to HR, ThoughtDigital, Inc., 55 Grant St., Ste. 370, Pittsburgh, PA 15219. No phone calls.

Senior SAP BI Consultant

Ensure highest quality SAP Business Intelligence implementation by providing expertise & guidance to client through extensive on-site support; requirement analysis; technical design & architecture; realization & construction; deployment; iterative & Incremental development. Travel req. BS In Comp. Science, MIS or related field & 3 years SAP exp. w/ multiple years SAP BI implementations. Competitive Selary. Send resume to Compendit Attn HR, 150 N. Michigan, Ste 3400, Chicago, IL 60601.

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OPERATIONS RESEARCH ANALYST (BUSINESS)

Analyze business and management operating procedures using mathematical modeling and other optimizing methods to develop and implement applications and systems to maximize efficiency. Prepare reports to management defining problem, evaluation and proposed solutions. Evaluate implementation and effectiveness of research. Will use Oracle-E business Suite Financial and Manufacturing Solutions. BS in Business Administration with emphasis on Finance or Accounting and 2 years experience required. Salary - $75,000. Jobsite - Durham. Send resumes to - Cree, Inc. Attn: HR. Job ORA. 4600 Silicon Drive, Durham NC 27703. No phone calls please. EOE/M/F/D/V/a drug free workplace.

Computer Scientist. Responsible for performing basic research in intelligent agent systems & applying the results to challenging real-world problems. Responsibilities will include managing maintenance & extension of existing BDI (Belief Desire Intention) agent software & leading research efforts in the area of robustness for agent systems. Requires PhD in computer science with doctoral research & dissertation emphasis in BDI agent systems plus five years experience in the application of BDI agent systems to real-world problems. Requires publication record in BDI systems. Background must include theoretical foundations of BDI agent systems; programming in Prolog, Python, Java, and Lisp; software engineering project leadership experience. This position is located in Menlo Park, CA. Please apply, indicating job# 2263, via our website @ www.sri.com or mailing address at 333 Ravenswood Ave, Menlo Park, CA 94025. Attn: Employment Dept. EOE/AA.

Practice Director - Meet with management of prospective client to analyze client's needs, with a focus on SAP projects; propose project and pricing, utilizing on-shore and off-shore teams; plan and manage project deadlines and budget; act as liaison between client, on-site team and off-shore team; responsible for successful implementation and customer satisfaction. Bachelor's degree or foreign equiv in CS/CA, Eng, Business or related field. Must have 2 yrs of consulting, project management or related exp. 2 yrs exp must include 1 yr of project coordination exp for project requiring on-site and off-shore teams. Must have SAP experience. $100,000/yr 40 hrs/wk. EEO/AAP/M/F/V/H Submit resumes to Site Administrator, Greene County Career Link, 4 West High Street, Waynesburgh, PA 15370-1324. Job Order No WEB 451283.

Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in ATG, iPlanet, Samba, CVS, NIS, NFS and Tibco. Requirements: Bachelor's Degree, educational or functional (3 years experience=1 year of college) equivalent, in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of ATG, iPlanet, Samba, CVS, NIS, NFS and Tibco Salary: $70,242/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: McKeesport CareerLink, Attn: ES Manager, 345 Fifth Ave, McKeesport, PA 15132, Job No. WEB449565.

Controller
Duties: St. Pete Beach, Florida. Responsible for directing the financial activities of company by preparing reports which summarize and forecast company business activity and financial position in areas of income, expenses, and earnings based on past, present, and expected operations. Oversees accounting department and is directly involved in the preparation of company budgets. In addition, establishes and recommends major economic objectives and company policies to management. Requirements: Bachelor's Degree in Mathematics. Salary: $48,000/yr. Hours: 40 hr/week - 8:00 a.m. to 5:00 p.m. Contact: Send resume to: Agency for Workforce Innovation, P.O. Box 10869, Tallahassee, FL 32302, Att: EH., JOFL#2545285.

Programmer Analyst, 40hrs per wk., 8:30 A.M. TO 5:00 PM., $50,527 per yr., job is located in Tallahassee, FL Bachelor's or equivalent degree in CS, Eng. or MIS. 2 yrs. exp. in the offered or 2 yrs. exp. in the related occupation as information systems or related field. Two years exp. to include: IBM mainframe, VSAM, JCL, COBOL, EASYTRIEVE. Employer accepts a foreign degree which has been evaluated and found to be equivalent to a U.S. Bachelor's degree from an accredited university. Employer accepts this determination from a qualified degree evaluation agency. Code, develop, system test, and implement programs for the State of Florida Medicaid Account generating special, one-time reports. Create detailed CSR test result packages. Prepare detailed technical specifications. Perform problem determination analysis. Use program and skills such as: IBM-390, COBOL, SAS, JCL, TSO, VSAM, Expeditor, Easytrieve. Send resume to Agency for Workforce Innovation, PO Box 10869, Tallahassee, FL 32302 REF: JOFL# 2532873

System Administrator (work site varies): Analyze, configure, install: SAP R/3 Core Systems (3.x - 4.6v), 4.7 Enterprise Edition, SAP BW module (3.0b, 3.1c). Define, configure, create SAP R/3 Basis Security Profiles. Manage SAP R/3 applications (SAP R/3, CRM, B2B, B2C, B2P) in terms of user mgmt security, transport, hot packages, general system admin. Install, upgrade HP-UX (10.x) for K-class, D-class environ. Perform overall UNIX Systems Admin. B.S. (or functionally equiv. combination educ. and work exp: in lieu of B.S. will accept 3 yrs of related work exp. for every 1 yr educ lacking. Exp. can replace up to 3 yrs educ) Comp. Sc., Eng., or Systems Mgmt. + 2 yrs exp. in SAP R/3 and SAP R/3 BW Basis Admin., UNIX Admin. Travel req'd. $60,000/yr. 40hr/wk. Must have perm. work auth. to be employed in U.S. Send resume to McKeesport CareerLink, ES Mgr., 345 Fifth Ave., McKeesport, PA 15132-2600. Refer to job order # WEB 450027.

Multiple openings for software engineers to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in WebLogic, Visual C++ and Visual Cafe. Requirements: Bachelor's Degree, educational or functional (3 years experience=1 year of college) equivalent, in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of WebLogic, Visual C++ and Visual Cafe. Salary: $70,242/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: BECS/CareerLink Program Supervisor, Indiana County CareerLink, 300 Indian Springs Road, Indiana, PA 15701, Job No. WEB449555.

PeopleSoft Technical Consultant. Job location: Burlington, MA. Duties: Design & develop custom progs. using PeopleSoft appls. Analyze client reporting needs & develop & maintain client reports using nVision, Crystal & SQR. Create reporting delivering structure & deploy & monitor reports through PeopleTools & VistaPlus. Requires: B.S. in Comp. Sci., Eng. or a related field Coursework must incl. classes in Systems Analysis & Design & Info Systems Mgmt. Mail resume (no calls) to: Michelle Ramirez, Answerthink, Inc., 1001 Brickell Bay Dr., Ste. 3000, Miami, FL 33131.

Hexaware Technologies, Inc. has immediate, full-time opportunities for

Software Engineers, To Research, design, and develop computer software systems, in conjunction with hardware product development, applying principles and techniques of computer science, engineering, and mathematical analysis, formulate and design software system, will use a variety of software tools such as. PowerBuilder, TPF, Sybase, Perl, Solaris, Java, Corba. Master's degree or foreign edu. equiv. of same and 1yr exp. required

Systems Analyst Analyze science, engineering, business, and all other data processing problems for application to electronic data processing systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. Analyze and test system to identify errors and ensure conformance to standard. Coordinate installation of operating systems, and test, maintain, and monitor computer system. Revise system design procedures, test procedures, and quality standards. Will use a variety of software tools such as; Apache, Java, JDBC Oracle, PL/SQL, Servlets, Rational Rose. Bachelor's degree or foreign edu. equiv. and 1yr exp. required.

Technical Sales Managers to direct/manage sales of the company's IT consulting services, interact with clients to determine technical specifications and oversee initiation and development of offshore projects. Master's degree in Business Administration or Management plus 1 year of experience in the IT industry. Experience must have included business development initiatives and off-shore project execution in the fields of ERP (SAP/PeopleSoft Applications) or financial services or insurance services or transportation industry.

For some positions, we also accept any suitable combination of education, training or experience in lieu of the req. edu.. Travel and/or relocation required. Send confidential résumé, salary requirements and position applying for to: Hexaware Technologies, Inc. Attn: HR, 4343 Commerce Court, Ste. 618, Lisle, IL 60532 or www.hexaware.com.

Engineer

Pitney Bowes Inc. has an opening in Shelton, Connecticut for an Engineer.

Design, develop, integrate and test real-time, embedded software applications in high level languages as a part of a software development team.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field and relevant work experience, including college course/project work and/or work experience with developing and testing real-time, applications using high-level languages; knowledge of the Hitachi microprocessor architecture, software development toolset and associated debugging tools; version control system like PVCS or ClearCase; analyzing and defining customer application requirements; C language and HTML; and preparing documentation associated with software design and development effort.

Resume and/or cover letter must reflect each requirement above and specify reference code E/ST or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

Computer Scientist. Responsible for R&D of hardware & software formal verification framework. Duties include design & implementation of formal specification language, new automated verification algorithms; overall system infrastructure; perform research in formal methods area; write research papers & technical reports. This position requires Ph.D in CS with doctoral dissertation emphasis in software engineering & formal methods for analysis & verification of software & hardware systems. Research background to Include: design, implementation; use of model checkers, static analyzers, compilers; software verification; implementation & design skills including object technology; programming skills including C++, Scheme, Emacs-Lisp, & Java; working knowledge of automatic theorem proving & formal semantics of programming languages. This position is located in Menlo Park, CA. Please apply, indicating job# 2251, via our website @ www.sri.com or mailing address at 333 Ravenswood Ave, Menlo Park, CA 94025. Attn: Employment Dept. EOE/AA

Programmer Analyst (Unix Networking) - Multiple Openings

Install, customize and fine tune performance of the operating system on heterogeneous platforms. Achieve connectivity of workstations using networking technologies. Perform systems configuration management for both hardware and software. Provide user support and network troubleshooting services. Carry out performance tuning of application packages such as Relational Database Management Systems (RDBMS) under Unix operating system. Manage TCP/IP based services such as NFS, NIS, FTP, TELNET, etc. Perform network management using SNMP and related tools. Ensure fault tolerant printer services and back-up management procedures. Utilizing knowledge of installation of WAN connectivity with heterogeneous hardware platforms using routers and/or gateways over leased and dedicated circuits. Using knowledge of internals on operating systems for patching and coding device drivers and network programming using IP/IPX, TLI, Streams and SOCKETS. Bachelor's Degree (or equivalent) in Computer Science-Math/Engineering/Science/Business-Commerce and 1 yr. experience in job offered or as Software Engineer/Systems Analyst are required. Must have appropriate combination of skills as follows: 1 of A and 2 of B and 1 of D; or 1 of A and 2 of B and 2 of C; or 1 of A and 2 of C and 2 of D. A includes IBM AIX, HP-UX, Sun Solaris, DEC Open VMS/Ultrix, SCO Unix/ODT, USL Unix SVR4, UnixWare, B includes TCP/IP, IPX SPX, NFS, Bridges, Routers, Gateways, X.25, X.400, ISDN, ATM; C includes Perl, Korn Shell, C Shell, RPC, TLI, Streams, SOCKETS, API & toolkits, DDK, AWK, SED, LEX, YACC; and D includes Ethernet, Token Ring, FDDI; High mobility preferred. 40 hrs/week, 8 am - 5 pm. $66,533 - $78,000 per year. Qualified applicants should contact or send resume to. Fayette County CareerLink, ATTN: CareerLink Program Supervisor, 135 Waylan Smith Drive, Uniontown, PA 15401. Refer to Job Order # WEB 448506.

IT Professionals

Seeking qualified candidates for Sr. & mid-level IT professional positions including: Programmer Analysts, Database Administrators, Software Engineers, IT/Software & similar type positions. Candidates must possess MS/BS or equivalent &/or related work experience. Mail resume & references to:

Patel Consultants Corp.
Attn: HR
1525 Morris Ave
Union, NJ 07083 EOE

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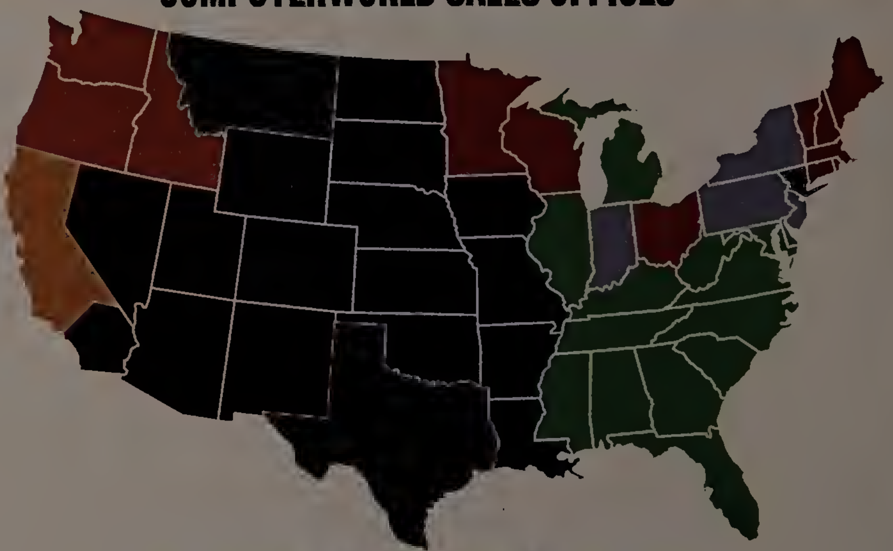

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Longhorn

said Roger Wilding, a Portland, Ore.-based senior technical engineer at shipping and supply chain services company CNF Inc. "It would be nice to have [WinFS] in the next release of Windows for the desktop, but I would prefer a clean, stable product."

Victor Stuart, an Indianapolis-based business solutions analyst at Sallie Mae Inc., said the change in plans for Longhorn won't affect his company at all. "We don't plan on using things that either don't exist or are merely part of a planned future release," Stuart said.

Conflicting Views

Rob Rhodes, a technical consultant at Louisville, Ky.-based Kindred Healthcare Inc., said the decision to remove WinFS from Longhorn sounded reasonable, since he thought Microsoft was "biting off quite a bit." Rhodes said he even likes the idea of WinFS potentially being an add-on to the operating system, since that would give his company the option of not using the technology if it adversely affects hardware requirements or performance.

Greg Sullivan, lead product manager on Microsoft's Windows client team, said WinFS is being developed independently of the client and server operating systems and will be delivered separately. He said that when finished, WinFS could be applied and installed on one of the existing operating systems.

"WinFS is their ticket for next-generation searching, and it also contains new APIs that could potentially compete against the Java platform. So there's more riding on this component than there is on Avalon and Indigo," said a software engineer at a major pharmaceutical company who asked not to be named. "If something's going to drop off the first release on Longhorn to make sure they get it right, it should be this."

But some users would prefer WinFS over other new features. Jason Glazier, senior vice president and chief technology and e-commerce officer at Lincoln Financial Group in Philadelphia, said WinFS was "one of the more significant advantages" of Longhorn. He said its removal "definitely detracts from the value of the Longhorn release and makes it less likely we will move when it is released."

Walt Smith, chief architect at a U.S.-based financial institution, said that he would like a more robust server environment as soon as possible and that 2007 "seems a bit far off for serious planning purposes."

He added that he would gladly forgo Avalon's 3-D graphics in favor of WinFS. "It's unfortunate that Microsoft has chosen to delay the delivery of potentially important improvements in the way that information is managed in the enterprise in favor of delivering more glitz and glamour in the front-end graphics subsystem of Longhorn," Smith said.

> **[Removal of WinFS] definitely detracts from the value of the Longhorn release.**
>
> **JASON GLAZIER**, SENIOR VICE PRESIDENT, CTO AND E-COMMERCE OFFICER, LINCOLN FINANCIAL GROUP

Sullivan said there will be more new features in Longhorn beyond those that Microsoft laid out at last October's Professional Developers Conference. He said Microsoft has yet to detail new functionality that will appeal to business users and consumers.

But Thomas Groves, a systems engineer at Oregon State University in Corvallis, said WinFS is the feature that interested him most, with its promise of greater file system speed, less-frequent file system degradation, improved data retrieval and seamless integration between network and local data.

"WinFS has the greatest potential to revolutionize Windows," Groves said.

"I'm not surprised that they removed promised functionality. This is, to me, part of Microsoft's pattern," said Ethan Roberts, an application architect at Winterthur North America Inc., an insurance company in Sun Prairie, Wis. "They continue to promise what is essentially vaporware, and it allows them to maintain their dominant position because the rest of the industry stays in a reactive, rather than proactive, mode of operation. As long as we as consumers continue to put up with it, they have no incentive to change."

If the Longhorn client ships in 2006, that will mark five years since the 2001 release of Windows XP. If the Longhorn server makes its 2007 projection, that will leave a four-year gap since Windows Server 2003. Contracts for Microsoft's Software Assurance maintenance program, which includes product upgrade rights, typically run for three years. So that means some customers won't get upgrades during their contract time frames.

Michael Lebiedzinski, assistant vice president of IT at Philadelphia-based Delaware Investments, said Microsoft should either provide the next release to those companies that didn't receive one or lengthen the contract term and spread the cost over more years. "It's obviously not fair to charge a customer software maintenance when new releases are not made," he said.

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Microsoft Presents Murky Picture of WinFS Server Plan

Microsoft is now claiming that WinFS was not part of the Longhorn server plans presented last October at its Professional Developers Conference (PDC), where it laid out details about the next major Windows release.

But that's not the way several analysts recollect discussions at that time. They said Microsoft gave the impression that WinFS would be part of both the Longhorn client and server.

Greg Sullivan, a lead product manager on Microsoft's Windows client team, said Microsoft talked about WinFS as a "client-only" feature at that time. In October 2003, "there were no plans to do WinFS on the server," he said. "The notion to do WinFS on the server was a subsequent decision. The plans were to ultimately do a WinFS implementation on the server, but not until the next release."

Bill Gates, Microsoft's chairman and chief software architect, said in a published interview late last month that the company "never had, in the Longhorn plan, WinFS server support. We were clear about that going back all the way to the PDC." A Microsoft spokesman confirmed the accuracy of the quote.

In an interview with *Computerworld* in August 2003, about three months before the PDC, Eric Rudder, senior vice president of servers and tools, said, "I have to deliver some of the .Net technologies that are included in Longhorn. You know, I include some of the storage technologies. That's part of WinFS. That's also in Longhorn." He was referring to his role in helping Will Poole, who heads the Windows client business, to be successful.

Last May, Bob Muglia, senior vice president of the Windows server division, told *Computerworld* that "WinFS is absolutely in Longhorn server." Muglia said that at the time Longhorn ships, WinFS might not be at the state of scalability where it could be used for collaborative services by hundreds of users but that scaling to tens of users would be no problem.

"Will you use it as an enterprise file server with hundreds or thousands of users attached? Probably not in the Longhorn time frame. It's probably something that comes a little later," Muglia said at the time.

Microsoft did not clarify the conflicting statements by *Computerworld*'s publication deadline, despite repeated requests for comment.

Sullivan said no date has been set for the release of the WinFS technology. "WinFS will come after the Longhorn client," he said. "Whether or not it's after the Longhorn server is undetermined."

Thomas Murphy, an analyst at Meta Group Inc., said he first heard that WinFS would be part of the Longhorn server before the PDC, during private briefings with Microsoft.

Steve Kleynhans, another Meta analyst, said it appeared that WinFS would be part of both the Longhorn client and server, based on public PDC presentations. But he said he got sketchy answers in private discussions with Microsoft. "They didn't have a lot of detail," he said.

– Carol Sliwa

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Fruits of Labor

IF IT SEEMS THIS LABOR DAY week like there's not much good news for people who work in IT, consider this: According to a new survey, most users think IT is doing a pretty good job — and a sizable number of non-IT managers actually want more IT staff. In the poll of 1,200 U.S. workers by staffing firm Hudson Highland Group, 75% of users who have a tech-support group rated their support as excellent or good. And 21% of managers surveyed said they think adding more IT staff will improve productivity. And nearly half of all workers (49%) believe technology upgrades and more IT training will improve their own efficiency.

Whaddya know — users think IT is pretty good after all.

And that says a lot about how IT work — and IT workers — have changed over the past few years. Even though budgets have been slashed and workloads have climbed, we've still made huge progress in transforming IT people, in the minds of users, from a bunch of obnoxious, antisocial propeller-heads to a useful, effective team that users actually like having around.

How did that happen? Maybe it started with all those e-commerce Web sites we had to build and maintain during The Great Dot-Com Scare. Everyone was convinced that if we didn't get them right, we'd be swept away by pure-play e-tailers. Management had to bet the business on IT's ability to deliver. Suddenly, IT was critical to the business.

And just as suddenly, we could no longer count on users to paper over poor application design and performance. No more clerks or telemarketers saving us from ourselves; if something wasn't right, customers experienced our failure directly. When sales were lost, it wasn't anyone's fault but IT's. We started to understand what users actually do. We started to think a little more like users — and to appreciate them.

Then came Y2k: an impossible project on an immovable schedule. This time, we knew we were depending on users to work around anything we missed or couldn't fix. Some users experienced early Y2k problems for themselves. Others sat through testing, worked up business-side contingency plans, even stayed up late on Dec. 31, 1999, just to get a head start on whatever might go wrong.

Users got a little better sense of how much blood, sweat and terror goes into an IT project that *has* to work. And for once, we really had something to thank them for.

Ever since, that back-and-forth has continued. We've helped users deal with a tidal wave of spam and viruses — things they felt the effects of directly. We also loosened up a little when it came to things like the wireless access points users plugged in themselves. (Not that we had a lot of choice; we didn't have the time or manpower to be full-time Wi-Fi cops. So we negotiated, and they cooperated — mostly.)

And users have seen what happens when help desks get downsized or outsourced. They've watched projects and upgrades get delayed because there weren't enough IT people. They've had to do more IT for themselves and have learned that that truly *is* doing it the hard way.

Yes, they really have gotten smarter about IT and about what IT people do. And we really have figured out that they know more than us about doing the business that pays our wages.

Which is a good thing. We've always known they need us. Now, just as users have come to understand the value of IT people, we're realizing that we need them. Without support from users, we can't do our jobs. And without project sponsorship from business units, we've got no jobs to do.

The closer we get to users, the better it is for all of us.

We've all heard that claim for years. Now, finally, it's not just a good idea — it's becoming a reality. And both IT people *and* users are seeing the benefits.

This Labor Day, for the people who labor in IT, that's very good news indeed. 49213

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at **frank_hayes@computerworld.com**.

SHARK TANK

Doing IT the Hard Way

After this custom application is updated, management is horrified to learn that customers are receiving nearly unreadable messages. "Any text manually edited appeared to have all spaces stripped out, making sentences appear as one long word," reports an on-scene pilot fish. "After an intensive bug hunt by the entire IT staff turned up zilch, we confessed on a conference call that we couldn't solve it. You can imagine our relief when we were told, 'Oh, you can ignore that one. One of our workers' space bar is broken.' "

Sweet

A user's PC is acting spooky – inserting random characters or suddenly typing characters on its own. Support pilot fish suspects the keyboard and replaces it, but three weeks later, the problem is back. "Inspiration strikes when I get on-site and notice the large bowl of Hershey's Kisses on the desk," fish says. "A blast of compressed air into the keyboard releases a cloud of tiny glittering fragments of conductive foil wrappers."

No Pets, Please

"This user called and said that every time he booted his system, he got a message that the system was doing an emergency shutdown," help desk staffer tells support manager pilot fish. "We discovered the problem – there was a dead lizard blocking the fan from turning. This was forcing the system to shut down because it detected the fan not running. He is now checking to make sure the lizard didn't have any friends."

Priorities

Pilot fish gets a call from a user who admits that she spilled coffee on her desk. "She was proud of the fact that she saved her keyboard," fish says, "but she needed her telephone replaced. That was, um, great. The phone cost $400. Her keyboard was $15."

Still Big and Red

While visiting a remote office of the bank he works for, this pilot fish gets an escort to navigate through a secured area. "But when I was ready to leave, I was told I could find my own way out," fish says. "The door wouldn't open, though. I was told I had to push the big, red, unmarked button that was mounted on the wall, several feet to the left of the doorway. Even though this wasn't a data center – it was just a floor with offices and cubes – after working in IT for over 20 years, do you know how hard it was for me to *force* myself to push a big red button next to an exit?"

GOODBYES ARE HARD, TOO. But Sharky wants to say so long to departing *Computerworld* boss Maryfran Johnson, who played a big part in making the Shark Tank a reality five years ago. Thanks, kid. Now get outta here – I've still got my hands full looking for true tales of IT life. Send yours to **sharky@computerworld.com**, and if I use it, you get a stylish Shark shirt. And check out the daily feed, browse the Sharkives and sign up for Shark Tank home delivery at **computerworld.com/sharky**

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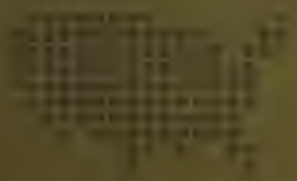

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